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The Development of Self-Efficacy for Trade and Industrial Career and Technical Education Teachers

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THE DEVELOPMENT OF SELF-EFFICACY FOR TRADE AND INDUSTRIAL CAREER AND TECHNICAL EDUCATION TEACHERS

by

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ABSTRACT

The purpose of this study was to review the development of self-efficacy for trade and industrial (T&I) teachers. Specifically, this study investigated how T&I teachers develop self-efficacy in classroom management, pedagogical practices, and content knowledge. Finally, the study reviewed key performance measures that indicate T&I teacher development of efficacious practices. Each performance measure was considered as it related to the aforementioned focus areas.

This qualitative study was informed by phenomenology. Twelve T&I teachers were interviewed in an effort to capture the essence of their experience as T&I teachers. The study was conducted at two career technical schools in Southeastern Virginia. Data were collected using open-ended interviews that focused on the participants' classroom management, pedagogy, and content knowledge. In addition, participants' levels of motivation, competence, and self-regulation were reviewed as a measure of their development of self-efficacy in the aforementioned areas of focus.

The results of this study suggest that the development of trade and industrial teacher self-efficacy is impacted by each of the performance measures. Trade and Industrial teachers learn to become efficacious through a combination of experiences. Some formal training is required for teacher development and preparation for instructional delivery. Nevertheless, the participants expressed a high regard for the informal, collegial, and on-the-job training that prepared them for delivery of relevant content knowledge. Consequently, trade and industrial teacher development of self-efficacy is contingent upon several formal and informal learning experiences.

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INTRODUCTION

The increased need for skilled labor in the United States (U.S.) is largely a result of an aging workforce. Stone, Kaminski, and Gloeckner wrote,

> Due to the large number of individuals retiring over the next ten years, a critical shortage of people available to work within the manufacturing industry is looming. This shortage is exacerbated by the lack of a properly educated workforce that meets the demands of the 21st century manufacturer. (Stone, Kaminski, & Gloeckner, 2009, p. 7)

The preparation for skilled labor careers requires both soft-skill and hard-skill training. Soft skills refer to employability skills such as interpersonal communication, problem solving, attitude, initiative, and other characteristics, whereas hard skills are typically task specific in career fields such as welding, mechanical assembly, electrical, and other industry-specific areas (Stone et al., 2009). The preparation of skilled labor rests in part on the shoulders of educators, more specifically educators categorized as career and technical education (CTE) trade and industrial (T&I) teachers, who are alternatively certified (AC). Therefore, in an effort to maintain clarity within the description of the aforementioned teacher category, the term trade and industrial (T&I) teachers will be used throughout this study.

T&I teachers are tasked with the delivery of instruction aligned with industry standards. The provision of industry standards is a key factor in preparing students for increased skilled labor demands. The inclination of tradesmen to transition from their craft to a teaching career, however, is somewhat challenging, as a result of state requirements for T&I teacher certification (Zirkle, 2002). In addition to skills needed for the postindustrial era, the National Association of Industrial and Technical Teacher Education (NAITTE) requires current T&I teacher preparation to include technology,

integrated academic and vocational education, decision-making, and problem-solving skills as standards for certification (Frantz, Gregson, Friedenberg, Walter, & Miller, 1996). In many states T&I teachers are granted initial certification and required to complete pedagogical coursework through university-level courses within a 3-year period.

While acknowledging the value of content application, some researchers have questioned the qualifications of T&I teachers as a result of their alternative teacher preparation training (Ruhland & Bremer, 2003). T&I teachers often enter the classroom through alternative routes to certification and develop their teacher practices on the job while pursuing highly qualified teacher status. Many alternatively certified (AC) teachers, career professionals who are licensed through alternative routes, are teachers without a bachelor's degree in the coursework they are teaching (Bowen, 2013). T&I teacher certification criteria "range from a high school diploma to a bachelor's degree, plus a specific number of years of work experience" (Bowen, 2013, p. 32). Initial certification licensure for T&I teachers is usually provisional and contingent upon completion of additional coursework. Although the certification is predicated on experience and technical competence, it requires additional coursework and professional development to achieve highly qualified teacher certification status (Zirkle, 2002).

Proponents of alternatively certified teachers assert the value of work experience prior to teaching; however, the need for specific skills has been noted. Frantz and colleagues wrote,

> Calls for reform from within the T&I profession that have persisted for some time are growing even more persuasive indicating that T&I teachers need to teach heuristic strategies, metacognitive skills, and personal and social skills along with

> occupational skills in order to adequately prepare students for the postindustrial era. (Frantz et al., 1996, p. 3)

Moreover, T&I teachers themselves acknowledge challenges, such as writing objectives on different cognitive levels and development of multilevel questions for student learning assessment (Burns, Schaefer, & Hayden, 2005). T&I teachers are expected to facilitate learning through lesson plans, classroom management, maintenance of environments conducive to learning, and student engagement. Consequently, these prevailing challenges impact the confidence level or self-efficacy of T&I teachers regarding their ability to encourage a desired learning outcome.

Across the literature, it is widely accepted that teacher self-efficacy is a predetermining factor of success. Self-efficacy, consistently recognized as an important attribute for teachers, corresponds positively with teacher and student outcomes (Swackhamer, Koellner, Basile, & Kimborough, 2009). Nevertheless, researchers have espoused the notion that teacher self-efficacy may vary with the nature of the individual classroom and student population (Koul & Rubba, 1998). For example, T&I classroom settings present a diverse population with a unique learning environment. This situation further emphasizes the importance of T&I teacher development of self-efficacy in industry-related classroom settings, as well as across student demographic groups.

Understanding the development of T&I CTE teacher self-efficacy provides insight for future practices in pedagogical and instructional methods, as well as a framework for the indoctrination of future T&I CTE teachers. This establishment addresses two key factors that impact T&I student success. First, the development of T&I teacher self-efficacy will increase skills attainment for student transition to the insufficiently skilled labor market:

> Of the 154 million people that are active participants in the labor force, many do not have appropriate skills nor do they understand how to obtain skills required to remain employed. A strong focus is required to clearly identify the education and training needs of the existing and future workforce to be capable of meeting the demands of the 21st century. (Stone et al., 2009, p. 9)

Second, understanding the development of T&I teacher self-efficacy will provide a roadmap for the indoctrination and professional development of future informally trained T&I teachers.

Burns wrote,

> It seems likely that increasing numbers of teachers will earn their teacher certification outside of traditional, formal learning environments and possibly garner the necessary teaching skills through informal teaching methods. Provisionally certified T&I teachers reported that they engaged in informal learning during their on-the-job training. The informal learning ranged from practical "how to" techniques for classroom management to more subtle awareness of their particular schools' culture. (Burns, 2008, p. 5)

Consequently, the alignment of instructional delivery and teacher practices will remain paramount to the provision of sufficiently skilled labor. Nevertheless, this alignment continues to rest on efficacious practices in T&I teacher delivery of content knowledge, pedagogical methods, and management of the environment in which students learn.

Introduction to the Problem

Although T&I teachers arrive at the classroom with industry experience and knowledge of their subject area, several problems remain. These problems relate to the development of teacher self-efficacy, as a result of their alternative route to teacher certification. Scribner stated,

> Teachers were unable to draw on their prior experience in ways that positively and substantively influence their teaching practices. This disconnect appears to be attributed primarily to teachers' lack of understanding on how to translate their knowledge into the curriculum they are teaching. (Scribner & Akiba, 2010, p. 29)

Scribner continued to emphasize the importance of pedagogical practices over knowledge of content area. The first challenge for the development of T&I teacher self-efficacy is the establishment of instructional pedagogy. Although the content area is often established in the minds of T&I teachers, the art of content delivery in a comprehensive and confident manner is not a part of T&I teachers' informal training.

In more recent research, Scribner and Akiba (2010) acknowledged supporters of alternative certification programs. Supporters have espoused the benefits of professional experience, longevity and diversity in the teaching profession, increased effectiveness in the classroom, and the application of prior knowledge and experience into the classroom. Although some researchers have acknowledged benefits of work experience as it relates to delivery of content, others have described the concept of informal teacher learning as unstructured and spontaneous within the context of real work and without focus on specific learning objectives (Burns, 2008). T&I teachers are often considered subject-matter experts as they possess content knowledge related to their career field; such knowledge implies efficacious practices. Nevertheless, challenges emerge in their transitioning to teaching as they attempt to deliver their knowledge in alignment with established content curriculum in a classroom setting.

Not only are classroom settings dramatically different from the workplace, but they also present a unique dynamic that is different from the work environment. Some T&I teachers experience difficulty in delivering instruction while managing student behaviors and interaction; however, according to research, practices that engage students impact classroom management. A teacher's command of academic ability and subject-matter knowledge may impact T&I teacher classroom management (Blazer, 2012).

Consequently, the development of T&I teachers' self-efficacy in pedagogy and content knowledge is essential to their ability to manage student learning in a classroom setting.

Rationale and Purpose

The development of self-efficacy for T&I alternatively certified teachers is essential to their practices as professional educators. Moreover, T&I teachers are, in part, tasked with the preparation of skilled labor to meet the demand for a highly skilled workforce. Yet, there has been much debate on the topic of informal training for alternatively certified T&I teachers and its impact on student learning. Nevertheless, proponents suggest experience as added value to T&I teacher training. Some researchers have suggested years of experience as a greater determining factor of self-efficacy than routes to teacher certification (Blazer, 2012). This study delved deeper into the development of T&I teachers' self-efficacy.

First, I focused on self-efficacy in an effort to establish measures of determining self-efficacious behavior. Second, I focused on teacher self-efficacy as it related to the key components of pedagogy: content knowledge and classroom management. Finally, I focused on T&I teacher self-efficacy as it related to pedagogy, instructional delivery, content knowledge, classroom management, and student performance. Burns stated,

> Trade and Industrial teachers take on numerous roles to work effectively in schools. Among their many roles they are, like all teachers, program managers, instructional designers, facilitators of learning, and student advisors. To successfully perform these roles, teachers must master a myriad of complex skills. (Burns, 2008, p. 3)

The purpose of this study was to investigate the development of T&I teacher self-efficacy. I examined the development of T&I teachers' self-efficacy through exploration of their work experience, informal training, and other professional development

resources. Specifically, I explored the impact of their alternative routes to teaching related to their classroom practices and student achievement. In addition, I investigated the concept of content knowledge and work experience as factors in the development of self-efficacy. Ultimately, I described the process of T&I teacher self-efficacy development through the lens of the teachers' lived experience.

Research Questions

To understand development of T&I teacher self-efficacy in the context of career and technical education, I addressed the following research questions:

1. How do trade and industrial career and technical education teachers develop practices to ensure student learning?
2. What are the main pedagogical challenges, and have they improved with years of experience? Why or why not?
3. How do trade and industrial teachers' industry work experiences influence their classroom and instructional practices?

Definition of Key Terms

Alternate routes to certification. Alternative routes to certification are described as "procedure[s] offered by many states to license teachers who have not graduated from a state approved teacher preparation program" (Ryan & Cooper, 2004, p. 527).

Career and technical education. Career and technical education provides individuals with general proficiency related to their present or future occupations. It provides students with training in skill development for today's economy and economic trends (Crossman & Cameron, 2014).

Certified teacher. A certified teacher must possess a current teacher license. States require individuals to "hold a valid teaching certification to accept employment as a public-school teacher" (Armstrong et al., 2009, p. 386).

Self-efficacy. Self-efficacy is one's belief about his or her capabilities to produce performance that influences outcome (Bandura, 1994).

Teacher preparation program. A teacher preparation program "establishes standards which prepare individuals to become teachers. These standards relate to various factors deemed necessary to meet the requirement to obtain a state teaching license" (Diaz, Pelletier, & Provenzo, 2006, p. 49). The factors may include pedagogy, specific content, completion of a teaching test, student teaching, and other state-specific requirements.

Teacher self-efficacy. Teacher self-efficacy is described as a "judgment of [a teacher's] capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran & Hoy, 2001, p. 783).

Teacher shortage. The National Education Association estimated the need for two million teachers to enter the field by 2018 as a result of increased student enrollment and one million teachers' entering retirement (Diaz et al., 2006, p. 49).

Trade and industrial teacher. Trade and industrial teachers are teachers who enter the classroom as content-level experts, who may have acquired their content expertise through a combination of industry training and on-the-job experiences (Burns et al., 2005).

Contribution to the Field

The increased demand for skilled labor requires effective instructional methodologies for students enrolled in T&I courses. Self-efficacy informs teacher level of effectiveness; therefore, understanding the development of T&I teacher self-efficacy can provide a roadmap for improving the quality of T&I teacher practice. The development of T&I teacher self-efficacy informs key practices that impact student success and transition to the workforce: "Teacher beliefs in their capabilities to impact student learning outcomes has been consistently related to teacher behavior, student attitudes, and student achievement" (Tschannen-Moran & Hoy, 2007, p. 954). CTE leaders' understanding and providing opportunities for T&I teacher professional development regarding self-efficacious instructional delivery and practices can have a positive impact on students' preparation for entering the workforce as highly skilled professionals. This phenomenologically informed study describes the development of self-efficacy of trade and industrial teacher practices in the context of CTE.

Limitations

This study has several limitations. First, the study was conducted in CTE schools in Southeastern Virginia; therefore, it does not necessarily represent all T&I teachers in Virginia or any other state. Second, the study involved interviews of only 12 T&I teachers from within the CTE schools; consequently, the study's generalizability is diminished. Nevertheless, the study may have implication for further inquiry into the development of self-efficacy for alternatively certified T&I teachers: for example, investigating the challenges of T&I teachers' practices during their novice years in the

classroom, describing the leadership support necessary for T&I teacher development, or engaging T&I teachers in pedagogical professional development.

Overview of the Study

This document is organized into five chapters. Chapter 1 includes summary information regarding trade and industrial teacher shortages, the impact of trade and industrial teachers on skilled labor in the United States, and the debate about alternatively certified T&I teacher practices. Additionally, the problem statement, purpose of the study, research questions, and contribution to the field are presented. The chapter concludes with the limitations of the study. Chapter 2 begins with introductory and background information and presents historical, empirical, and theoretical research on alternative teachers, self-efficacy of alternatively certified T&I teachers, and their role in preparing a skilled workforce. Next, literature on the foundational components of self-efficacy and teacher self-efficacy is reviewed. The final section of Chapter 2 reviews literature that suggests key factors in the development of self-efficacy for T&I teachers. The methodology for the study is outlined in Chapter 3, including the research method, research questions, design of study, participants, human subjects, measures or instruments, data collection procedures, limitations, and delimitations. The results of the study are presented in Chapter 4. Chapter 5 consists of a discussion of the study findings and suggestions for further research.

CHAPTER 2

REVIEW OF LITERATURE

Prior to this study, there had been no seminal review of T&I teachers and their practices with regard to teacher preparation. Some research had suggested a correlation between professional and contextual experiences of T&I teachers that impact their self-efficacy in instructional practices (Sampson et al., 2012). Self-efficacy is critical for T&I teachers because it informs the effectiveness of their pedagogy, content knowledge, and classroom management. In this review of literature, I explore the development of self-efficacy in the context of T&I career and technical education (CTE) teachers. First, I use the background section of this chapter to introduce (a) T&I teachers as a subcategory of alternatively certified teachers and (b) the areas of debate surrounding their teacher preparation as well as the development of self-efficacy. I also review a variety of literature on self-efficacy, teacher self-efficacy, and T&I teacher self-efficacy. In addition, I discuss the foundations of self-efficacy and its key components to establish an understanding of the development on human behavior. Next, I review teacher self-efficacy to demonstrate its impact on teacher practices. Finally, this chapter culminates with a review of literature on T&I teacher performance, as it relates to the development of self-efficacy and its impact on instructional practices.

Background

In this section, I draw from numerous bodies of literature regarding the demand for skilled labor, T&I CTE teacher preparation, development of T&I teacher self-efficacy, and the impact of this self-efficacy on CTE student performance. There is an increasing demand for CTE teachers to address the growing shortage of skilled labor in

the United States. According to Dereu, "U.S, manufacturers have complained of a shortage of skilled workers and the Federal Bureau of Labor Statistics backs up their concerns" (Dereu, 2010, p. 22). School districts, more specifically, career and technical education (CTE) schools within and serving school districts, are central to recruiting and preparing the next generation of skilled workers in the United States. CTE schools face the dual challenge of providing high school students with a high-quality secondary school education that prepares them for both the high-skilled workforce and for high-wage careers (Dereu, 2010; Walker, Gregson, & Frantz, 1996). The increased demand for teachers, however, along with stagnant salaries and challenging teaching conditions, has impacted enrollment in teacher preparation programs (Darling-Hammond, Chung, & Frelow, 2002). Consequently, of the thousands of new teachers hired each year, many lack teacher education training and, therefore, are alternatively certified (AC) teachers (Feistritzer & Chester, 2002).

Although minimal literature existed about the development of self-efficacy for T&I teachers, increasing demands for skilled labor have continued to focus attention in this direction. Customized instruction for student transition to the workforce requires skilled T&I teacher instructional practices. "It is often asserted that educators should adapt their teaching style to the learning style of the student" (Threeton & Walter, 2009, p.9). Yet, the majority of T&I teachers are without teacher preparation training and, therefore, may lack the skills to adjust their teaching styles.

AC teachers are those who have not completed undergraduate degrees in the field of education. Ruhland and Bremer described AC teachers as taking "non-traditional routes to enter the teaching profession" (Ruhland & Bremer, 2003, p. 286). According to

Darling-Hammond et al. (2002), AC certifications are alternatives to traditional 4-year undergraduate pathways to teacher certification that vary from state to state with regard to length and requirements. Nevertheless, states and districts continue to increase their participation in alternative teacher certification programs, largely because of simple supply and demand for teachers.

Career and technical education (CTE) leaders constantly use AC teachers due to dwindling CTE teacher preparation programs and the challenges involved in identifying adequately trained CTE teachers (Wilkin & Nwoke, 2011). Some districts, depending on the discipline, are more likely than others to use AC teachers as a result of teacher preparation or the lack thereof. For example, the skilled trades areas are often underrepresented in teacher preparation programs, resulting in the utilization of AC teachers (Su, Dainty, Sandford, Townsend, & Belcher, 2011). These teachers are categorized as trade and industrial (T&I) teachers.

T&I teachers are members of a subcategory of AC CTE teachers that typically deliver training in the skilled trades area: for example, nurses, automotive technicians, emergency medical technicians, carpenters, cosmetologists, and culinary arts professionals (Backes & Burns, 2008). According to Burns et al. (2005), T&I teachers are AC teachers who enter the classroom as content-level experts, having acquired their expertise through a combination of formal industry training and on-the-job training. They develop their teaching skills informally at their school sites, while enrolled in university education coursework. These industry professionals choose to change their careers and become teachers. The career pathway to becoming a T&I teacher is largely grounded in the process of AC routes. There are few teacher training programs for T&I

teachers. Backes and Burns stated, "Job incumbents in this career are hired after years of employment in an occupational field, and subsequently obtain the necessary credentials for their new teaching career" (Backes & Burns, 2008, p. 100). During their initial years of teaching, however, as do their counterparts in other teaching disciplines, they often begin to question their abilities to teach and experience a decline in their confidence to deliver student success (Backes & Burns, 2008).

T&I CTE teacher self-efficacy is becoming increasingly impactful as more CTE courses emphasize increased rigor and the provision of a highly skilled workforce. Teacher self-efficacy can impact students' transition to the next phase in their career pathway as well as the provision of the next generation of the skilled workforce. According to Høigaard, Giske, and Sundsli (2012), teachers with high self-efficacy exhibit greater levels of lesson planning, are more tolerant of students, and demonstrate a greater commitment to teaching. These factors impact student performance and success. Therefore, it is important to understand the realm of alternative career and technical education teacher licensure and its implications for T&I CTE teacher self-efficacy.

Although some of the literature has reported inconclusive data when comparing AC and TC teacher self-efficacy (Bowen, 2013), others studies have suggested that traditionally certified teachers are better prepared and feel a greater sense of responsibility for student learning (Ruhland & Bremer, 2003). Darling-Hammond, Holtzman, Gatlin, and Heilig (2005) questioned the pedagogical awareness and practices of AC teachers and posited a resultant disservice to students. This belief suggests that traditional teacher preparation yields greater self-efficacy in teacher practices. Although much of the opposing literature espoused the notion that practical experience promotes

self-efficacy, there has been little research in the area of AC teacher self-efficacy as related to T&I teacher development (Burns et al., 2005).

In contrast to traditional teacher preparation and hiring practices, T&I teachers typically are employed while enrolled in teacher preparation programs. Researchers have suggested that T&I teachers' development in pedagogical and classroom management practices is deficient as a result of the absence of structured training or education (Burns et al., 2005). Not all educational scholars are in agreement with this position. In fact, some have described the T&I process as appropriate and worthy of some level of duplication, citing T&I teachers' work experience as an advantageous component of their teacher preparation process. Other scholars have argued that emphasis should be placed on teacher practices over experiential content knowledge (Scribner & Akiba, 2010).

Given the many facets of the educational genre, there is no one-size-fits-all teacher preparation process. For example, Walter and Gray (2002) pointed out that the requirement of work experience for some CTE teachers was not established to improve teaching skills but to ensure that the teachers were subject-matter experts with advanced content knowledge; however, some scholars have disagreed. They have professed that content knowledge does not supplant formal teacher pedagogical training. According to Fox and Duck (2001), some research has suggested that TC teachers with content knowledge and fully trained pedagogical practices are highly rated and are more successful with students than AC teachers. Although scholars have debated the value of teacher training related to content knowledge, Jones and Moreland (2005) pointed out that content knowledge commands teacher instructional methods because teaching begins

with an understanding of what needs to be taught. They further noted that content knowledge impacts pedagogical practice and curriculum implementation.

Teacher content knowledge and pedagogical practices are measures of self-efficacy that impact teacher performance and student achievement. Nevertheless, in a more recent work, Fox and Peters (2013) argued that teacher self-efficacy is also measured by a teacher's belief that student success is possible even with the most difficult students and environment. This phenomenon is often demonstrated in classroom settings. Classroom management practices are pivotal to the success of teachers and to the establishment of teacher self-efficacy.

Self-Efficacy

In this section I discuss the foundations of self-efficacy. Specifically, the section addresses the relationship between individual performance and goal achievement to emphasize the importance of the development of self-efficacy in an individual's life accomplishments. According to Bandura, "self-efficacy is concerned with people's beliefs in their capabilities to produce given attainments" (Bandura, 1997, p. 307). Additionally, I discuss individual experiences and their impact on the development of self-efficacy. Finally, I discuss several measures of self-efficacy as they relate to the efficacious designation.

Self-efficacy is often used as a determinant of an individual's potential level of performance. It guides one's expectation of his or her level of competence with regard to the outcome of a given task or area of expertise. Individuals with high self-efficacy experience greater success on tasks and measured performance (Prat-Sala & Redford, 2010; Swackhamer et al., 2009). An individual's perception of his or her capabilities can

become a self-fulfilling prophecy as a result of the individual's own intrapersonal limitations. Self-efficacy is a motivational construct based on self-perception of competence as opposed to *actual* level of competence (Tschannen-Moran & Hoy, 2007). Consequently, an individual's level of self-efficacy determines his or her outlook on performance outcomes.

To create an environment in which people can develop and apply their potential, leaders should understand the concept of self-efficacy. Self-efficacy is one's belief about his or her capabilities to produce designated levels of performance that exercise influence over events affecting his or her life (Bandura, 1994). Self-efficacy impacts one's ability to overcome challenges and accomplish goals. Although it is a common practice for people to establish goals, the realization of intended outcomes is often hinged upon an individual's level of self-efficacy (Bandura, 1994). Self-efficacy is often undergirded by one's past life experiences, which influence confidence in goal attainment.

According to Pajares, "self-beliefs that influence choices are instrumental in defining one's experience and providing an avenue through which individuals exercise control over the events that affect their lives" (Pajares, 1996, p. 4). That is, the development of self-efficacy is a scaffold for life experiences and the successful or unsuccessful outcomes of those experiences. Some scholars have suggested that an individual's value of an outcome and the task necessary to achieve the outcome can be as impactful as an individual's experiences that impact self-efficacy (Pajares, 1996). This school of thought challenges the theory that self-efficacy largely determines outcome; it implies that the level of an individual's value of an outcome impacts the level of outcome achievement that is independent of self-efficacy. Nevertheless, Bandura stated, "One

cannot conjure up outcomes without giving thought to what one is doing and how well one is doing it" (Bandura, 1994, p. 32). Value is added to potential outcomes based on one's confidence in the ability to perform or impact the outcome. Therefore, value placed on an outcome is often based on one's confidence to exercise control over a particular situation.

The assessment of self-efficacy belief is hinged not only upon an individual's self-confidence in task completion or control of an outcome but also upon the task or specific outcome itself. Assessment of self-efficacy is undergirded by the attainment of the desired outcome (Bandura, 1997). Across the research, self-efficacy levels vary based on the task at hand. An individual's particular capability may vary across activities depending on the level of demand within activity domains or differing situational circumstances (Bandura, 1997). Consequently, a true measure of one's self-efficacy requires affirmation through performance measures of outcomes.

Performance Measure of Motivation

Motivation determines activities in which people engage, the length of their engagement, and the depth to which they engage in these activities (Justina, 2012). Although the literature has maintained that positive or negative performance does impact one's level of self-efficacy, it has implied that each level of performance motivates and informs tasks. People with high levels of confidence in their capabilities approach difficult tasks as challenges and become more engaged in the tasks. In such instances, the challenge becomes the motivator and represents the level of self-efficacy an individual may possess. Conversely, those with low confidence dwell on their deficiencies and shy away from difficult tasks, easily conceding to the challenge of

difficulty and demonstrating little faith in their capabilities (Bandura, 1994). Subsequently, low self-efficacy is displayed in individuals' lack of motivation to overcome challenges and acceptance of limitations therein.

Individuals guide their actions anticipatorily based on forethought of their capabilities. Motivating influences on outcomes are impacted by self-beliefs of efficacy. The literature has contended that goals are set based on self-influence and on a cognitive comparison process (Justina, 2012). By making self-satisfaction conditional, people give direction to their behavior and create incentives to fulfill their goals (Bandura, 1994). This finding indicates that motivation to achieve success is garnered through resistance to failure as an opposing comparison.

Chin, Gully, and Eden (2001) asserted that achievement motivation is dependent on an individual's type of goal orientation. Motivationally well-regulated learners demonstrate good self-efficacy in their quest to learn and are intrinsically interested in successfully achieving the task at hand. Goal theorists contend that people motivated by intrinsic goals possess a desire to acquire new knowledge and skills, whereas appearing competent to others motivates those with extrinsically driven goals. Intrinsically motivated individuals interpret failure as a sign to expand their effort and self-evaluate their performance, whereas individuals with extrinsic goals interpret failure as a sign of low self-ability compared to others (Chin et al., 2001; Michalsky, 2012). According to Chin et al., traditional motivational researchers contend that learning that is an outcome of intrinsic motivation is superior and more desirable than learning that is fostered through extrinsic motivation. Nevertheless, in many real-world settings, intrinsic

motivation and extrinsic motivation often exert simultaneous positive influences on behavior.

Performance Measure of Self-Regulation

Self-regulation is a proactive process through which individuals organize and manage their thoughts and behaviors in an effort to become masters of their own learning and achieve favorable outcomes. According to Gestsdottir and Lerner, "self-regulations are individual-level characteristics that link the individual and the context and constitute the means through which children, adolescents, and adults contribute to and shape their own development" (Gestsdottir & Lerner, 2008, p. 203). The scholars asserted that understanding of self-regulation is vital to the comprehension of one's development. Examples of self-regulation are planning, time management, goal setting, completion of difficult tasks, and self-monitoring of performance (Ramdass & Zimmerman, 2011).

Self-regulated individuals monitor their work and provide internal feedback. Zimmerman referred to Benjamin Franklin's process of educating himself to establish the impact of self-regulation: "He set learning goals for himself, and recorded his progress in a ledger. Franklin felt this process improved his memory and his 'arrangement of thought'" (Zimmerman, 1990, p. 3). This passage suggests that successful self-regulation patterns encourage continuous cognitive growth and self-direction. When individuals find themselves at a point of uncertainty, however, the trajectory to self-regulation may become challenging.

Development of self-regulation is crucial to individual development; however, self-regulation is not an easily attainable construct for some individuals. Those challenged with self-regulation may benefit from participation in learner-centered

environments that provide opportunities to establish control over their own learning. Michalsky (2012) suggested a "learn how to learn" approach. The scholar argued that individuals challenged with self-regulation should learn how to more actively regulate their own cognitive, metacognitive, and motivational procedures.

Although all learners use self-regulated procedures to some degree, self-regulated individuals encounter challenges and create ways to solve or overcome the challenges. Self-regulated individuals are aware of their own knowledge; they take initiative to seek unknown information when needed and attempt to master it (Zimmerman, 1990). According to Michalsky, "self-regulated individuals are cognitively, metacognitively, and motivationally active participants in their own learning" (Michalsky, 2012, p. 1107); therefore, they accept greater responsibility for their achievement outcomes.

Self-regulated individuals are goal oriented. Their motivations for regimentation are not always intentional. Intentional self-regulators consciously align their actions with personal goals to increase functionality and self-development; however, organismic regulations that are environmental and physiological constructs, such as working conditions, temperament, and physical development, impact individual behavior across situations and inform one's self-regulation (Gestsdottir & Lerner, 2008). Although the constructs of intentional and organismic self-regulators suggest conflicting behaviors, the literature suggests they overlap. This overlap occurs when an individual can inhibit a response based on a predicted positive or negative outcome (Gestsdottir & Lerner, 2008).

Highly self-regulated individuals control their emotions and maximize the relative number of desirable goals and outcomes while minimizing the undesirable outcomes. This process is best achieved by careful selection of appropriate goals and establishment

of a process through which to acquire those goals (Gestsdottir & Lerner, 2008). Elliot, Isaacs, and Chugani (2010) asserted that individuals possess a self-evaluation system that guides their thoughts, feelings, and actions and helps to determine the amount of effort expended on activities. A self-regulated individual's activities are goal relevant. Such an individual develops goals and monitors levels of attainment while constantly processing his or her actions and reactions (Tricarico &Yendol-Hoppey, 2012).

Performance Measure of Competence

Considerable resources are devoted to education and other forms of competency development. Increased internationalization, new production concepts, and the increased need for knowledge-intense production in the workplace undergird the sense of urgency for competence attainment. Insufficient attainment of competency suggests a widening of the knowledge gap in society and the world of work (Eilström & Kock, 2008). The competence displayed during a specific task is a major factor in the successful completion of that task. Han defined competency as "the ability to successfully meet complex demands in a particular context through the mobilization of psychosocial prerequisites (including both cognitive and non-cognitive aspects" (Han, 2008, p. 31).

Feeling comfortable and capable allows people to devote more attention to their performance (Elliot et al., 2010). Competencies that demonstrate an individual's ability level are often utilized as a predictor of self-efficacy. Nevertheless, Gresalfi, Martin, Hand, and Greeno (2008) argued that with consideration of both theoretical and practical competence levels, more accurate measurements require a shift in analysis from an individual to an environmental focus. This shift in focus allows competence to be viewed as an interaction between opportunities provided to an individual and his or her ability to

participate competently in those instances. Goal-oriented individuals realize success through the demonstration of competence. One's competence is often used as a measure of knowledge on a particular subject (Spinath & Steinmayr, 2012).

Researchers have held that competence has two independent components. The first component is mastery goals, focusing on developing competence through task mastery. The second component is performance goals, centering on demonstration of competencies relative to others (Law, Elliot, & Murayama, 2012). It was postulated that mastery and performance goals extend to four additional measures: (a) mastery approach (focus on attaining task-based or intrapersonal competence), (b) mastery avoidance (focus on avoiding task-based or intrapersonal incompetence), (c) performance approach (focus on attaining normative competence), and (d) performance avoidance (focus on avoiding normative incompetence) (Law et al., 2012). The researchers found correlations between mastery approach and mastery avoidance and between performance approach and performance avoidance. The two sets of goals exhibited a positive correlation. This finding implies that the more individuals adopt approach goals, the more they adopt avoidance goals. The researchers continued to explain this phenomenon as they suggested that striving to approach success would likely be comingled with striving to avoid failure (Law et al., 2012).

Other studies have questioned competence as a measure of knowledge and self-efficacy. The question was driven by the position that feelings of competence can arise from tasks at different levels of normative difficulty. Therefore, there should be consideration of the fit between task and competency. Moreover, ability self-concept measures are often domain specific, whereas self-efficacy items are typically task

specific. Therefore, individuals with a low self-concept of a particular domain will enlist performance avoidance and consequently establish low self-efficacy on a particular task. Although some will fall short of competence, accomplishment relates to the performance of others on a task. Specific aspects of goals and tasks related to individual performance are important because they contribute to or detract from the overall environmental measurement of competence (Spinath & Steinmayr, 2012). According to Eilström and Kock, "a work environment that permits and stimulates learning and competence development may also be of fundamental importance for employees' health, well-being and personal development" (Eilström & Kock, 2008, p. 5).

Teacher Self-Efficacy

In this section I explore the foundations of teachers' self-efficacy and key factors that influence their development. The discussion provides a theoretical foundation for teacher performance. The literature presented here establishes an operational definition of teacher self-efficacy. Next, levels of teacher self-efficacy are examined to describe teachers' efficacious behaviors. Finally, the development of teacher self-efficacy through self-regulated practices is discussed.

Teacher self-efficacy is the teacher's estimate of his or her ability to influence student outcomes. Teachers with a high sense of self-efficacy are more confident in their abilities to perform strategic actions for intended outcomes (Chong & Kong, 2012; Tschannen-Moran & McMaster, 2009). Moreover, teachers' self-efficacy impacts their practice in numerous ways. For example, successful delivery of instruction is informed by teachers' confidence in methodology and knowledge. Consequently, students are the benefactors of teacher self-efficacy. "A teacher's sense of self-efficacy has been

consistently recognized as an important attribute of effective teaching and has been positively correlated to teacher and student outcomes" (Swackhamer et al., 2009, p. 63).

Teachers' sense of self-efficacy influences their thoughts and emotions, thereby directing their control of student outcomes. Teacher self-ratings—teachers' evaluations of their own practice—correlate directly to their sense of self-efficacy as related to student learning (Fox & Peters, 2013). Low self-efficacy teachers are pessimistic about students' ability to improve; they use negative sanctions to get students to perform. High self-efficacy teachers are open to new ideas, less critical of students, and willing to experiment with new instructional methods (Høigaard et al., 2012; Tschannen-Moran & McMaster, 2009). A teacher's transition from a low to a high self-efficacious practitioner is dependent upon a degree of self-regulation. According to Zimmerman, "a self-regulated learning perspective on student learners is not only distinctive, but it has profound implications for the way teachers should interact with students" (Zimmerman, 1990, p. 4). The development of a high self-efficacious teacher through self-regulation is partially dependent upon an individual's self-oriented feedback. This method requires teachers to monitor their teaching strategies and react by adjusting practices or strategies.

Across the literature, researchers have supported the notion that self-regulation is dependent upon continuous feedback (Zimmerman, 1990). Nevertheless, it has been posited that teachers must set goals as a proactive means of making a change in the classroom. They must ask themselves, "What is my goal" and "What is wrong with the classroom?" A self-regulating teacher should then monitor conditions, process the situation, and work to control the situation or attain a set goal, as well as next steps. It

has been postulated that this loop continues as teachers self-regulate to impact their practice (Tricarico & Yendol-Hoppey, 2012).

Self-Efficacy in Teacher Pedagogy

Teacher levels of self-efficacy are demonstrated through their pedagogical practices. Shulman (1986) referred to pedagogy as the "how" of teaching. Teachers must know how to command an effective delivery of instruction if they are to meet the demands of student achievement. Teachers often spend less time on areas for which they perceive low self-efficacy and more time in areas of increased confidence because a strong self-efficacy belief is linked to high student achievement. The literature has supported this behavior, explaining self-efficacy as a future-oriented belief related to one's level of competence in a given situation (Mulholland & Wallace, 2001; Tschannen-Moran & McMaster, 2009). Teachers' practices are often reflections of skills and knowledge developed from their teacher preparation experiences; however, some teachers infuse life experiences and other informal methods as a component of pedagogical practices.

Some teachers are products of formal teacher preparation programs; others arrive at the teaching profession through alternative routes with less formal training and increased content knowledge. Yet, the pedagogical expectation of performance or the development of self-efficacious practices does not yield to either preparation experience. The pedagogical performance of all teachers influences the level of student success. The application of content knowledge of the alternatively certified teacher is paramount in achieving the expected outcomes. Moreover, the instructional methodology of all teachers is essential to the process of attaining the desired student learning outcomes.

Both content knowledge and instructional methodology are key contributors to teacher pedagogy. An increased level of content knowledge as well as teaching methods appropriate for knowledge attainment undergirds teacher self-efficacy with regard to student learning outcomes and teacher pedagogical practices (Swackhamer et al., 2009).

Self-Efficacy in Teacher Content Knowledge

Some scholars have argued that teacher preparation programs should place more focus on the development of teacher self-efficacy through emphasis on content knowledge. Swackhamer et al. wrote, "Teachers need specialized knowledge that goes beyond the knowledge of most adults" (Swackhamer et al., 2009, p. 65). Self-efficacy is context specific; therefore, the level of perceived ability changes for each person depending upon the situation or task. Consequently, teachers' perceived ability is impacted by the competence or content knowledge of their craft. Low levels of specific content knowledge negatively impact teacher performance on tasks. Successful teacher development programs place emphasis on subject content and relationships among teachers in an effort to establish collaboration and therefore increase student achievement (Chong & Kong, 2012; Swackhamer et al., 2009).

Although some researchers suggested that teachers trained and certified in a specific content area yield a benefit to secondary student achievement, others posited that pedagogy practices have a greater impact. The latter research was supported across the literature, as researcher asserted that courses focused on how to teach the content had a positive impact on teacher self-efficacy. Studies indicated that teachers with high levels of self-efficacy demonstrate different characteristics related to work ethic. Moreover, high self-efficacy teachers work longer with struggling students, recognize student errors,

and attempt new instructional methods that support student learning (Akiba, LeTendre, & Scribner, 2007; Swackhamer et al., 2009).

Self-Efficacy in Teacher Classroom Management

Classroom management is a necessary prerequisite to effective instruction. A high sense of self-efficacy in teachers is often related to a high level of functionality in the area of classroom management. Classroom management has been defined as an individual's ability to manage student behavior, create a rapport with students, and develop classroom rules (Tricarico &Yendol-Hoppey, 2012). Novice teachers have reported classroom management to be the second greatest area of difficulty. They cited organizing the classroom, dealing with the needs of different levels of students, and creating rules and procedures among the greatest challenges (Casey, Dunlap, Brister, & Davidson, 2011). When teachers are challenged in the area of classroom management skills, they struggle to survive professionally; however, proper training to develop competence in classroom management before entering the classroom can reduce the struggle and stress (Sampson et al., 2012). Other researchers asserted, "Beginning teachers must possess the skill of organizing a classroom which provides an orderly environment that increases academic engaged time and decreases distractions" (Choy, Wong, Lim, & Chong, 2013, p. 70)

Trade and Industrial Teacher Self-Efficacy

In this section I explore the foundations of T&I teacher self-efficacy. T&I teachers' self-efficacy guides their practice and therefore is a determining factor for student success and transition to the workforce. I first review the implications of T&I teachers' preparation as it relates to the development of their self-efficacy. Second, I

review the existing literature and present reported challenges and benefits of T&I teacher preparation. Next, I explore the components of T&I teacher pedagogical practices, content knowledge, and classroom management as key factors of instructional delivery and development of teacher self-efficacy. Finally, I explore the measure of student performance and its implications for T&I teacher self-efficacy and performance.

There has been broad agreement across the literature that student performance is closely linked to teacher quality. Teacher self-efficacy may have the most significant impact on student achievement. Moreover, the development of instructional capabilities can be the most important aspect of university teacher preparation programs (Choy et al., 2013; Walker et al., 1996). It was noted that T&I teachers, "like teachers of other content areas, over the course of one year begin to question their abilities to be teachers, and also have declining confidence in the learning potential of their students" (Backes & Burns, 2008, p. 101). They, as are other teachers, are tasked with numerous roles such as instructional designers, facilitators of learning, program managers, and advisors to students.

T&I teacher preparation can have implications for teachers' feelings of preparedness (Bowen, 2013). According to Bradshaw (1998), alternatively prepared teachers provided fewer opportunities for students to engage in higher level thinking. Nevertheless, proponents of T&I have suggested that collaboration with veteran and other teachers promotes student engagement at all levels. Backes and Burns (2008) asserted that collaboration with academic teachers and student populations with genuine interest and aptitude for learning positively impact T&I teacher performance. They continued to

postulate that T&I teachers seek ways to make teaching and learning enjoyable and effective.

Some T&I teachers are emboldened as a result of their practical experience in their field. They assert that authentic knowledge gained while employed as experts in their field has provided a more in-depth understanding of course content than the knowledge gained in postsecondary teacher programs (Burns et al., 2005). Improved teacher quality resulting from alternative certifications is an overgeneralized assumption and requires additional politically and geographically specific research. Although T&I teachers' content knowledge often rivals that of other teachers, T&I teachers concede delinquency in other pedagogical practices such as writing objectives, time-on-task, instructional feedback, and assessment of student performance (Bowen, 2012; Bradshaw, 1998).

Although teacher pedagogy is an area of concern for T&I teachers, the impact on student performance is not conclusive. A study by Rocca and Washburn (2005) found no significant differences in the self-efficacy of T&I teachers and other teachers. On the other hand, Duncan and Ricketts (2008) asserted that non-alternatively certified teachers demonstrated higher self-efficacy in program management and pedagogical practices due to teacher education courses, early field experiences, and student teaching programs. The researchers suggested that without significant teaching or classroom experience, novice teachers' personality characteristics imply a predisposition on which to base future expectations and therefore inform self-efficacy. Highly efficacious teachers demonstrate positive personalities and promote democratic learning environments to engage students

in the learning process, thereby promoting student achievement; negative personalities, however, deliver the opposite impact (Jamil, Downer, & Pianta, 2012).

Those with less favorable perceptions of T&I teachers expressed concerns about quality pedagogical practices. Fox and Duck questioned,

> If we use alternative licensure options, are we sacrificing quality for expediency and can alternative licensure programs provide teachers with enough skills to swim successfully around the rapids of their first school year without drowning in paperwork and classroom management crisis? (Fox & Duck, 2001, p.4)

Supporters of T&I teachers note that tradesmen have been recruited to teach their trade and prepare those interested in related industry careers. According to Backes and Burns (2008), T&I teachers enter their classrooms with high expectations for themselves and for their students. There is a correlation between professional experience and contextual experience that suggests greater career satisfaction and impact on T&I student achievement. Additionally, teachers are motivated to prepare students for the future of their career field. Moreover, T&I teachers receive their content knowledge through a combination of on-the-job training and formal industry training, but they are expert craftsmen. Consequently, the alternative route is the most feasible for attracting skilled T&I teachers (Backes & Burns, 2008).

T&I Teacher Pedagogy

Some researchers have questioned whether professional experiences adequately prepare T&I teachers for pedagogical practices. According to Burns et al. (2005), T&I teachers enter the classroom as content-level experts prepared through on-the-job training; however, formal pedagogical training is the exception, not the rule. Yet, it has been postulated that the correlation between professional experience and contextual experience of T&I teachers suggests greater impact on student achievement (Sampson et

al., 2012). Although T&I teachers are often products of informal routes to teaching, they are held accountable for facilitating learning through pedagogical practices such as lesson planning, classroom management, maintenance of conducive environments, and student engagement.

T&I teacher pedagogy training has been established as a topic of debate among educators. It has been posited that writing objectives on different cognitive levels and development of multilevel questions present challenges for these teachers (Burns et al., 2005). Consequently, there is a need for some level of T&I teacher professional development. Frantz and colleagues asserted that despite research's repeatedly making the case for more T&I pedagogy training, "historically, the emphasis in T&I training has been on competence in the subject matter to be taught or the content of the occupation. How the subject is taught receives far less attention" (Frantz et al., 1996, p. 3). The latter statement does not negate the importance of pedagogical training for T&I teachers; however, it is a reason for opponents to question its validity in 21st-century skills preparation.

Although teacher pedagogy is an area of concern for T&I teachers, the impact on student performance is not conclusive. Opponents of T&I teachers' routes to certification express pedagogical and self-efficacy concerns. Yet, a study by Rocca and Washburn (2005) found no significant differences in the self-efficacy of T&I teachers and other teachers. On the other hand, Duncan and Ricketts (2008) asserted that traditionally certified teachers demonstrate higher self-efficacy in program management and pedagogical practices due to teacher education courses, early field experiences, and student teaching programs.

Instructional practices for T&I teachers. Without significant teaching or classroom experience, T&I teachers' personality characteristics imply a predisposition on which to base future expectations and therefore inform self-efficacy (Jamil et al., 2012). Traditionally certified teachers have experience with direct formal instruction that engages learning through lectures, discussion, simulation, and other techniques, thereby impacting their self-efficacy. The development of instructional capabilities can be the most important aspect of university teacher preparation programs (Choy et al., 2013; Walker et al., 1996).

Nevertheless, T&I teachers engage in informal experiential learning, predominantly unstructured, which takes place outside institutional learning environments. According to some scholars, T&I teachers should develop the self-efficacy to teach heuristic strategies, metacognitive skills, and personal and social skills, along with occupational skills (Frantz et al., 1996). Teacher self-efficacy may have the most significant impact on student achievement. The literature posited that T&I teacher preparation has implications for teachers' feelings of preparedness regarding instructional delivery (Bowen, 2013). According to Bradshaw (1998), T&I teachers provide fewer opportunities for students to engage in higher level thinking. Other researchers, however, have posited that T&I teachers are more likely to communicate higher expectations for low-income and minority students and are committed to developing instructional practices that are responsive to the needs of diverse learners. Highly efficacious teachers display positive personalities and promote democratic learning environments that engage students in the learning process, thereby promoting student achievement (Jamil et al., 2012).

T&I Teacher Content Knowledge

Some T&I teachers are emboldened as a result of practical experience in their fields. They assert that authentic knowledge gained while employed as experts in their field provides a more in-depth understanding of course content than the knowledge gained in postsecondary teacher programs (Burns et al., 2005). The question of knowledge transfer, however, is born of this contention: "Perhaps some teachers are not comfortable with their own knowledge of teaching in their content area and therefore cannot be flexible in adjusting their lessons for different groups of learners" (Dixon, Yssel, McConnell, & Hardin, 2014, p. 115). In the field of T&I, few studies have investigated the teachers' informally acquired content knowledge and its relationship to the transfer of knowledge to learners. Consequently, this lack of research is reason for some educators to challenge T&I teachers' delivery of informally learned content to students through the use of effective instructional methodology (Burns, 2008).

Improved teacher quality resulting from content knowledge and work experience is an overgeneralized assumption that requires additional research. Although T&I teachers demonstrate the ability to deliver step-by-step procedural content knowledge with specific concepts and skills, transfer of knowledge is largely dependent upon similarity of context (Burns, 2008). In this regard, T&I teachers' content knowledge often rivals that of other teachers. Yet, T&I teachers concede deficiency in other pedagogical and procedural practices that relate to preparation and delivery of content, such as writing objectives, time-on-task, instructional feedback, and assessment of student performance (Bowen, 2012; Bradshaw, 1998).

T&I Teacher Classroom Management

Time-on-task and preparation of content delivery are important pedagogical skills related to student engagement and behavior in the classroom. T&I teachers, not unlike other teachers, are required to manage their classrooms in a manner that is conducive to the maximization of student learning. According to Schonfeld and Feinman, "the alternatively certified teachers [tend] to experience classroom management problems at a significantly higher daily rate" (Schonfeld & Feinman, 2012, p. 231). Yet, alternatively certified T&I teachers often view their laboratory environment as an advantage in classroom management over other teachers' classrooms because such an environment facilitates hands-on engagement (Prater, Backes, & McElvey, 2005). T&I teachers also deliver lessons in classroom settings, however, and have expressed challenges in keeping students engaged throughout a lesson.

Scholars have argued that less pedagogical training equals increased classroom discipline: "Because alternatively certified teachers, in comparison to their traditionally certified colleagues, begin their careers with many fewer university-level teacher training courses, it may be expected that the less extensively trained alternative certified teacher will encounter more classroom difficulties" (Schonfeld & Feinman, 2012, p. 219). In part, informally trained teachers attribute their inabilities to challenges with creating classroom management rules for a diverse population with different levels of learning and abilities (Casey et al., 2011). When faced with these challenges, some T&I teachers report experiencing increased levels of classroom management concerns. Teachers who feel well prepared to address classroom management challenges cite practical instruction and hands-on learning as well as their own work experience. Others who report some

level of challenge infer the need for training in classroom management as a remedy for their moderate to severe challenges (Ruhland & Bremer, 2002).

A survey administered by Ruhland and Bremer (2002) found that 33 of 179 alternatively certified teachers considered themselves *very adequately* prepared for classroom management. The remaining 146 respondents considered themselves *moderately* to *not adequately* prepared to manage classrooms. Although T&I teachers use the laboratory environment as a strategy for student engagement, they and other alternatively certified teachers alike have identified classroom management as the second greatest challenge for alternatively certified teachers (Casey et al., 2011). Across the curriculum, student engagement is recognized as a strategy that increases student learning and reduces classroom management challenges. T&I teachers often are able to accomplish student engagement in the laboratory setting; however, they continue to experience challenges with classroom management in other settings. Such challenges can impact student performance.

T&I Teachers' Student Performance

As have most traditionally certified teachers, T&I teachers have demonstrated a commitment to student performance. According to Su et al. (2011), the two top-rated items in the category of teacher commitment are student related: student performance and student engagement. T&I teachers often are expected to perform well on the aforementioned items as a result of their general knowledge and professional experience; however, due to the lack of formal pedagogical training, some T&I teachers have low self-efficacy in their teaching ability (Schonfeld &Feinman, 2012). Therefore, student performance may be impacted negatively.

Although T&I teachers often demonstrate strong content knowledge as a result of their work experience, Jones, Womble, and Searcy (1997) argued, students in T&I courses historically have not been taught the application of academics in their field of interest. Nevertheless, contemporary T&I teachers are required to deliver instruction with academic application, use technology in the classroom, teach problem solving, and prepare students to be competitive in high-performance places of work (Walker et al., 1996). Consequently, T&I student performance on measures of academic attainment, along with skill application, is included on credentialing assessments.

T&I student performance on credentialing assessments and other performance measures also may impact T&I teacher self-efficacy. Researchers have identified the direction of student performance on assessments as a measure used by teachers to develop their self-efficacy. When students perform well, teacher self-efficacy increases; the opposite occurs as a result of poor performance. In addition, T&I teacher self-efficacy may be impacted by the teachers' perceptions of how their students' collective performance compares to that of students of more experienced T&I teachers. This phenomenon is likely because the new T&I teachers perceive themselves as less effective than their veteran counterparts (Justina, 2012). Although these comparisons often exist for T&I teachers in the education setting, an ultimate measure is often the success or failure of students' transition to the workforce or postsecondary education.

Although student performance with regard to transition to work or college is a measure of student success, this measure is not used simply as a means to assess T&I teachers' development of self-efficacy and student transition at the classroom and school level. T&I student performance regarding transition rates frequently is measured by

district and state educational agencies to assess program and teacher quality. In many states, T&I teachers' student transition rates must meet established standards to be considered acceptable performance. In addition, T&I teachers' student performance rates may impact teacher evaluations because student performance measures also are included on some state teacher measures (Virginia Department of Education, 2015a).

The combined research on T&I teacher self-efficacy can be organized into three main areas: content knowledge, pedagogy, and classroom management. First, this literature review highlights the fact that T&I teachers enter the classroom without formal training on pedagogical practices. Second, the literature review reveals evidence of classroom management's impact on student and teacher performance. Classroom management is often learned through student teaching, yet informally trained T&I teachers do not student teach. Third, although content knowledge is a main contributing factor to T&I teacher performance, it does not function alone. Other factors such as classroom management and pedagogy are equally important to the development of T&I teacher practices. This review of literature highlights the importance of CTE leaders' understanding the need for T&I teacher development to enhance self-efficacy in pedagogical practices, content knowledge, and classroom management.

CHAPTER 3

METHODOLOGY

This research study was informed by the phenomenological research tradition. A phenomenology study is a description of the meaning of several individuals' lived experience of a concept with a focus on commonalities during their experience. According to Bruyn, "phenomenology serves as the rationale behind efforts to understand individuals by entering into their field of perception in order to see life as these individuals see it" (Bruyn, 1966, p. 90). Ultimately, the goal of phenomenological research is to describe the universal essence through individual experiences. When the reader of a study understands the essence of the phenomenon, he or she is able to apply that essence to different contexts. Creswell stated, "Grief is the same whether the loved one is a puppy, a parakeet, or a child" (Creswell, 2007, p. 62).

The main purpose of this qualitative study, informed by phenomenology methods, was to investigate the phenomenon associated with trade and industrial (T&I) career and technical education (CTE) teachers and their development of self-efficacy in the classroom. Specifically, the study investigated ways T&I teachers learn teacher pedagogy, content knowledge, and classroom management to establish self-efficacy in their instructional delivery. This study included the use of a semistructured interview protocol to explore participants' perceptions and beliefs about their self-efficacy related to content knowledge, pedagogy, and classroom management. The study further aimed to answer the following research questions:

1. How do trade and industrial career and technical education teachers develop practices to ensure student learning?

2. What are the main pedagogical challenges and how have they changed with years of experience? Why or why not?
3. How do trade and industrial teachers' industry work experience influence their classroom and instructional practices?

In this chapter I first describe the research methodology. Second, I discuss the selected study design and, third, the selection of participants, ethical assurances, and the instruments and materials to be used in the study. Fourth, data analysis procedures, methodological limitations, as well as content and construct validity are discussed. Finally, I describe the type of data analysis to be used in the research.

Research Method

My approach to the study involved a paradigm of social constructivism. Hays and Singh defined social constructivism: "Social Constructivism is a belief system that assumes that 'universal truth' cannot exist because there are multiple contextual perspectives and subjective voices that can label truth in scientific pursuit" (Hays & Singh, 2012, p. 41). I maintained that T&I teachers compose a specific group of educators with work experience and requirements for their teacher certification as the primary commonalities. It was my presupposition, however, that each T&I teacher is unique and that collectively they represent a myriad of truths. Although they are all categorized as T&I teachers, their backgrounds and work experiences are often different. The nature of their crafts requires different skill sets and content knowledge. Conversely, their professional development, teaching environments, and pedagogical practices are often very similar. It was my contention that the absence of universal truth best captures the essence of T&I teachers as it relates to their development of self-efficacy.

This study attempted to establish an understanding of T&I teachers and their development of self-efficacy related to pedagogical practices, content knowledge, and classroom management. In the study, I used qualitative research methods to develop a phenomenology theory that describes T&I teachers and the development of their self-efficacy. The description explains what they have experienced and how they experienced it (Moustakas, 1994).

As the researcher, my relationship and interest in the topic reflected my occupation as a CTE school administrator. At the time of the study, I was an administrator of a regional CTE school with 60% of its faculty certified as T&I teachers. Although I was the instructional leader for teachers from multiple teacher categories, I observed a unique set of developmental practices with T&I teachers. More specifically, I noted varying confidence levels in application of content knowledge, classroom management, and pedagogical practices as areas of interest related to T&I teachers. Some veteran T&I teachers developed a level of performance aligned with teacher expectations regarding pedagogical practices, classroom management, and content knowledge, whereas other T&I teachers with the same number or more years of teaching experience continued to struggle. The identification of these areas as potential deficits for T&I teachers undergirded my interest in the development of T&I teacher self-efficacy. Consequently, I acquired an interest worthy of research that might aid in future development of T&I CTE teacher self-efficacy.

The selection of a study informed by phenomenology as a methodological approach provides the researcher an opportunity to capture the commonalities and universal essence among the participants without diminishing the individual contextual

truths. Broussard wrote, "The foundations of phenomenology inquiry lie in a holistic study of the human experience as it is lived from the perspective of the individual" (Broussard, 2006, p. 214). A phenomenological research design delivers insight regarding the themes and patterns portrayed by the study's participants. Each of the participants in this study responded to open-ended interview questions to identify unique and specific experiences.

Design of the Study

There are two approaches to phenomenological studies. There is a hermeneutical phenomenology, which is largely reflective of the researcher's interpretation of the phenomenon. According to Creswell, hermeneutical researchers "write a description of the phenomenon, maintaining a strong relation to the topic of inquiry and balancing the parts of the writing to the whole" (Creswell, 2007, p. 59). Moustakas (1994) wrote about the second approach to phenomenological studies: transcendental phenomenology. This type of phenomenology study places less emphasis on the researcher's interpretation and more emphasis on the participant's description of the experience.

I used a research design approach that would yield the greatest insight regarding participant experiences within the context of individual conditions while contributing to the collective essence of the study. According to Creswell, essence refers to "all experiences hav[ing] an underlying structure" (Creswell, 2007, p. 62). A transcendental phenomenology research design addresses the research questions and develops an understanding of the self-efficacy of T&I teachers. Moreover, transcendental phenomenology involves the analysis of individual participant experiences as well as the collective experience of all participants.

Moustakas (1994) explained a three-step procedure for transcendental phenomenological research designs. The researcher must first identify the phenomenon to be studied. I studied the development of T&I teacher self-efficacy as the phenomenon that would yield further understanding of the field of CTE and teacher development. More specifically, the study provides insight for leaders of T&I teachers regarding the development of content knowledge, pedagogical practices, and classroom management skills.

Second, the researcher must bracket his or her experiences with the phenomenon. This approach is referred to as *epoche*; it requires the researcher to set aside personal experiences in an effort to establish a fresh perspective toward the examination of the phenomenon. It is an important step for effectively analyzing data from research participants' experiences (Creswell, 2007). As the researcher, I made every attempt to suspend my personal experiences with the phenomenon and enter the field with a neutral disposition on the topic. This state of mind is often challenging for the researcher and rarely established with perfection. Nevertheless, this step is taken in an attempt to have the researcher view all information as if it were the first time of exposure (Moustakas, 1994).

Finally, the researcher must collect data from several persons who have experienced the phenomenon. "Often data collection in phenomenological studies consists of in-depth interviews and multiple interviews with participants" (Creswell, 2007 p. 61). I conducted 12 semistructured interviews using open-ended questions. The open-ended question format allowed for elaboration and further understanding of the phenomenon. Although this helped me understand each participant's experience, it also

yielded further understanding of the collective experiences of T&I teachers. Information collected through interviews was analyzed for themes and statements. Upon completion of the data analysis, I disaggregated and documented the participants' textural and structural descriptions of their experiences. Significant statements and themes were used to describe participants' experiences (textural). They were also used as a description of the context or setting that impacted the participant's experience with the phenomenon. In an effort to gain the overall essence of the participants' experiences, I wrote a composite description that combined textural and structural experiences (Creswell, 2007).

Participants

Participants were chosen because of their shared experience of teacher development as T&I teachers in a CTE school environment. I attempted to understand the nature of the participants' settings and how they developed their self-efficacy within those settings (Patton, 2002). T&I teachers enter the classroom with at least 2 years of experience and are considered to be subject-matter experts in their fields. Examples of these teachers' fields of experience are as follows: cosmetologists, automotive technicians, welders, computer repairmen, and culinarians. All participants were T&I teachers who received their teacher certification without having completed traditional teacher training and who were required to complete teacher training coursework during their initial 3 years as T&I teachers. The study population consisted of 12 T&I teachers who taught at a CTE school in Southeastern Virginia. I selected the population and site because of the rich representative sample of the population to be studied, the accessibility of the site, and the ability to maintain continuity with regard to the teaching environments.

I used purposeful sampling in the study. Purposeful sampling has been defined as "establishing criteria to obtain information-rich cases of your phenomenon before you sample your population" (Hays & Singh, 2012, p. 164). More specifically, I used stratified purposeful sampling to develop subgroups and illustrate their differences with regard to the development of self-efficacy (Hays & Singh, 2012). The 12 teachers were categorized to represent three subgroups of T&I teachers based on years of experience. The first group of teachers (Group 1) had completed 3-5 years of teaching at a CTE school. The second group of teachers (Group 2) had completed 6-15 years of teaching at a CTE school. The final group of teachers (Group 3) had completed 16 or more years of teaching at a CTE school.

Su et al. (2011) noted that T&I teachers report some challenges with curriculum and student behavior during initial years. The purpose of grouping teachers was to review self-efficacy according to years of experience in the classroom. It was presumed that this process might provide some generalizability as to their development or lack thereof according to years of experience.

The participants in this study were men and women who reflected the population of the study because they had not completed a traditional teacher-training program but held a teacher certification endorsement in T&I. They were actively teaching CTE high school students and had earned tenure and full endorsement in their field of T&I as a "highly qualified teacher" from the Virginia Department of Education licensure division. The participants were selected through local school divisions, professional networks, referrals from participants, and professional contacts. Each of the participants was a

volunteer with the opportunity to withdraw from the study at any time and without risk of any damages. Participants were not compensated for engaging in this study.

Protection of Human Subjects

Ethical considerations are paramount throughout the research process. They are especially important when the research involves human subjects. Creswell wrote, "We do not want to place the participants at further risk as a result of our research" (Creswell, 2007, p. 44). The participants' personal information and all data collected during the interview were protected. The purpose of the study was reviewed with the participants, who were reminded that participation was voluntary, with the right to withdraw from the study at any time. The identity of the participants remained confidential and was not associated directly with the collected data. The researcher consciously considered ethical issues such as gaining consent, avoiding deception, maintaining confidentiality, and assuring anonymity of the participants (Creswell, 2007). The data collected through the interview protocol (Appendix A) were stored on a password-protected removable storage file and secured in a locked space. There were hard copies of all required signature forms, as well as transcripts and other notes from participant interviews, which were maintained in a sealed envelope and locked in a file cabinet drawer accessible only to me. I provided the participants with contact information in case there were questions or concerns before, during, or after the research. All participant responses and data will be maintained for 3 years after approval of the dissertation. After 3 years, hard copies of the data will be destroyed using a shredding machine, and all electronic files will be deleted from the secured removable storage.

Measures–Instruments

This study was based on in-depth, semistructured, and open-ended questions that assisted in identifying and understanding the development of self-efficacy for T&I teachers (Moustakas, 1994). According to Creswell, the researcher should "determine what type of interview is practical and will net the useful information to answer research questions" (Creswell, 2007, p. 132). I conducted one-on-one interviews and completed all interviews in person. Interviews conducted in person provide opportunities to note social cues, such as body language, facial expression, voice, and other nonverbal actions (Opdenakker, 2006).

I collected each participant's informed consent and provided adequate opportunity for participants to ask questions related to the research. All participants received the same open-ended questions and had the opportunity to expand upon their responses to each of the questions. An interview guide was used to conduct the open-ended interviews. According to Polit and Beck (2004), the research instrument is paramount with regard to data reliability. The validity of the questionnaire was assessed upon completion and review of the pilot study. Questions determined to be ineffective were eliminated.

According to Creswell (2007), phenomenological research is heavily dependent upon trustworthiness. I established trustworthiness through the use of peer debriefing, thick description, and member checking. Hays and Singh (2012) defined thick description as a detailed account of the research process that is usually not only evident in the research outcome but also may be measured using an audit trail. The scholars continued to describe member checking as ongoing consultation with the participants to

ensure the researcher has captured the essence of the points they were attempting to get across during their respective interviews.

Data Collection Procedures

In this phenomenological informed study, my primary focus was the development of T&I teacher self-efficacy. A pilot study, consisting of interviews with three volunteer T&I teachers, was conducted. The results of the pilot study provided an opportunity for me to make adjustments to improve the study and yield participant responses that were more representative of the study's target population. The pilot study results were utilized to help refine the open-ended questions for the participant interviews. Next, I conducted 12 interviews as my main data collection process. The T&I teachers were employees of CTE schools in Southeastern Virginia. Data were collected during the interview with the use of an electronic recorder. After each interview, I reviewed and analyzed the data, as well as identified themes and patterns to establish commonalities and unique findings. Finally, I assessed participants' responses for indicators of high and low levels of self-efficacy. In an effort to understand the greatest disparities between high and low self-efficacy of T&I teachers, a second interview was conducted with 6 of the 12 participants (3 who demonstrated high self-efficacy and 3 who demonstrated low self-efficacy). Once again, data were reviewed and analyzed, and themes and patterns were identified to determine commonalities and unique participant experiences.

A request for permission to conduct the study was submitted to the human subjects review board. The proposal to conduct the research outlined all procedures in the study, along with information about participant age, risk, and population. The

proposal included a draft informed consent form for committee review (Creswell, 2007). Next, I sought, through the proper school officials, to gain permission from the local school division of each participant. Upon approval, I sought volunteers that fit the participant criteria from each of the CTE schools. I reviewed volunteer applications and selected 12 participants based on best-fit criteria for participation.

Each participant was contacted by telephone to schedule an interview. During the phone conversation, a private, secure location that provided a level of comfort for the participant was established (Hays & Singh, 2012). Each participant signed an informed consent form prior to beginning the interview. Participants were provided an overview of the research topic and the rationale for its investigation. Next, the participants were reminded of their option to continue or terminate their participation. Each participant was assured of the researcher's intent of confidentiality and elimination or minimization of any potential harm to each of them as a result of participation. Participants were asked if they had any concern of harm as a result of their participation. Each participant was offered a copy of the final report or an abstract of the final study (Creswell, 2007).

During the interviews, I bracketed my previous experiences with the phenomenon in an effort to achieve a fresh perspective of the participants' descriptions (Creswell, 2007). This process required that I allow participants to respond to each of the 12 questions on the questionnaire instrument with minimal interruptions and listen attentively to achieve a better understanding of participants' experiences. Follow-up questions were asked and recorded after participant responses and as necessary. At the conclusion of each interview, a structured debriefing session was conducted.

Data Analysis Procedures

Researchers interview participants to identify patterns and themes that are not directly observed (Patton, 1990). Upon completion of each of the interviews, data were transcribed. I conducted member checking and, if necessary, made adjustments to transcribed data. Transcripts were reviewed for themes and patterns. Emerging themes from each interview were coded. I enlisted two colleagues to determine interrater reliability. A codebook was developed to identify collective themes of all participants. The collection of codes was compared to the literature for analysis of the phenomenon. Upon proper analysis and understanding of patterns and themes, inferences were established. I recorded common themes and patterns as findings of the research.

Limitations and Delimitations

This study included only T&I teachers from CTE schools in Southeastern Virginia who had taught 3 years or more. It did not include T&I teachers who taught in comprehensive schools, teachers in CTE schools outside Southeastern Virginia, or T&I novice teachers with 1-2 years of experience. The T&I teachers who volunteered and met the requirements to participate in the study were the only participants. Although this limitation reduced the likelihood of participants' removing themselves from the study, it did not give voice to teachers with provisional teacher licenses. The ability to generalize the outcomes of teachers outside the geographical location of the study was diminished. Nevertheless, the outcome of the study does provide a basis for further research in another geographical location with different subgroups of teachers and other professionals.

CHAPTER 4

PRESENTATION OF FINDINGS

The purpose of this qualitative study was to examine the development of self-efficacy for trade and industrial career and technical education teachers. This study involved three research questions that were investigated through individual open-ended interviews. The study included 12 T&I teachers from two career and technical centers in Southeastern Virginia. Although all participants earned T&I certification, each was unique in his or her teacher endorsement area, years of industry experience, or years of teaching experience; however, each participant had more than 3 years of T&I teaching experience.

This chapter addresses the three research questions established in Chapter 3. The first section of this chapter provides an overview of trade and industrial teacher industry requirements and teacher licensure procedures. The main purpose of the overview is to provide the reader with an understanding of T&I teacher experience in the content areas as well as the requirements for employment and teacher licensure. Establishment of the aforementioned concepts provides the reader with a working knowledge for understanding the key factors related to the development of self-efficacy in T&I teachers.

In the second section, I address the first research question on the practices that influence trade and industrial teachers' need for professional development, by exploring teacher pedagogy, classroom management, and transfer of content knowledge. In this section, I guide the reader through the practices of pedagogy, classroom management, and transfer of content knowledge and concerns in an effort to demonstrate T&I teacher challenges and professional development solutions. In the third section, I address

Research Questions 2 and 3. Research Question 2 was related to the challenges that determine trade and industrial teacher capacity to master the skill of teaching; it was addressed through the exploration of competence, motivation, and self-regulation. The section investigates the establishment of each indicator and its impact on teacher development of self-efficacy. Finally, Research Question 3, was related to the ways in which T&I teachers' formal and informal training and work experience influenced their classroom and instructional practices. This was explored through review of industry standards and teaching standards, as well as factors merging or separating each standard.

Section I: Setting of the Study

To thoroughly explore the factors that influence T&I teacher development of self-efficacy, it is important to provide the reader with background information on T&I teachers and procedures for hiring them, as well as licensure requirements in the State of Virginia. My purpose in this section is to establish a working knowledge of the background of the T&I teacher industry and T&I instructional experience. I provide evidence for T&I teachers' experience in Southeastern Virginia's career and technical education centers. The information was collected primarily through open-ended interview questions with each teacher participant. Each question reflects the participants' development of self-efficacy; however, collectively, the responses to the questions provide evidence of common factors that influence self-efficacy.

Trade and Industrial Teacher Participants

T&I teacher participants were employed at regional CTE centers. Each center provided CTE instruction to secondary students from surrounding school divisions. The participants were all T&I certified with more than 3 years of teaching experience. They

were evenly represented by gender, and their ages ranged from 38 to 61. The participants' years of industry experience ranged from 3 to 26 years. The participants represented 10 trade and industrial teacher Virginia endorsement areas. Table 1 reflects participant demographics.

Table 1. *Participant Demographics*

T&I endorsement area	Years of teaching experience	Years of industry experience	Age	Gender
Welding	18	10	51	Male
Utility or heavy construction	4	21	46	Male
Cosmetology	16	3	38	Female
Cosmetology	4	21	45	Female
Nurse aide	26	4	56	Female
EMT	15	17	45	Male
Culinary arts	7	6	45	Male
Auto collision repair	11	21	61	Male
PC technology	6	8	41	Male
Cosmetology	5	26	57	Female
Veterinary assistant	15	8	52	Female
Robotics technology	5	12	46	Female

Requirements for Employment

T&I teachers are hired to teach career and technical courses that are industrial in nature. Examples of industrial courses are welding, automotive service technology, and computer repair. Although T&I teachers are not required to hold collegiate teacher credentials in Virginia, they must meet the standards for initial licensure upon employment. T&I teachers are required to have a minimum of 2 years of documented experience in their field of expertise. In content areas for which there is an industry credential requirement, such as the automotive industry, teachers must hold the

Automotive Service Excellence (ASE) credential to be endorsed to teach in the content area (Virginia Department of Education, 2015b).

Trade and Industrial Teacher Licensure Procedure

T&I teachers must meet several requirements prior to earning full licensure in the State of Virginia. These teachers are often allowed to enter the teaching profession by meeting the minimum requirements for hire and to receive a 3-year nonrenewable provisional license. To achieve full licensure and maintain status as a T&I teacher, however, they must complete the required coursework that is germane to the profession of teaching. Teachers must complete prescribed coursework in accordance with Virginia Department of Education requirements. Upon successful completion of the coursework, T&I teachers are granted full licensure and endorsement in their content areas (Virginia Department of Education, 2015b).

Section II: Factors that Influence the Development of Self-Efficacy for Trade and Industrial Teachers

As data were analyzed, codes were used to identify emergent influential themes related to the development of self-efficacy for T&I teachers. The three prominent themes that emerged as influential on T&I teacher self-efficacy were pedagogy, classroom management, and the transfer of content knowledge to the student. The first prominent theme of pedagogy reflects the participants' positions on the art of teaching and the nuanced procedures that are outside the content but germane to the nature of teaching. The participants emphasized pedagogy and indicated its important role in their day-to-day teaching responsibilities.

The second prominent influential theme to emerge from the study was classroom management. Participants reported the impact of classroom management as a key

variable in levels of success with instructional delivery. They described the importance of its establishment as a way to gain control of the learning environment and discussed the benefits of classroom management training. Additionally, they noted the importance of support from administrators and colleagues.

The third and final influential emergent theme was the transfer of content knowledge. Participants grappled with the learning modalities of industry compared to those of the classroom environment. They discussed instructional practices related to hands-on instruction compared to theoretical instruction through lecture. Although several participants recognized the value of lecture, they expressed a preference for hands-on instructional methodology. The participants also acknowledged the value of understanding student learning styles and its impact on their ability to transfer knowledge to the students. The three emergent factors influencing the development of self-efficacy for T&I teachers are pedagogy, classroom management, and transfer of content knowledge.

Theme 1: Pedagogy

Across the interviews, participants expressed a belief that pedagogical practices impacted their levels of self-efficacy as classroom teachers. Throughout the research, participants discussed the importance of pedagogical practices, such as the nuances related to lesson plan development, instructional methodology, student engagement, and required documentation of student performance. Some participants described their confidence level with pedagogical practices as challenging and without direction, whereas others touted industry experience as a key factor in their ability to perform

pedagogically. When asked which pedagogical task was the least favorite, one participant stated,

> I know attendance has to be done, but we get right into our discussion sometimes. As students arrive, the attendance gets pushed off to the side. The various paperwork we have to fill out. Just, guess, the mundane tasks that don't really feel like I'm teaching—it's not a part of teaching. It's something that while being a teacher it is difficult to keep up with.

One participant expressed his challenge with "paperwork" during his interview for employment as a T&I teacher. According to his recollection, during the interview he stated, "You give me a chance to do this, I can teach these students. When it comes to all your paperwork, that's not my strong point. You may have to help me with that." While demonstrating low self-efficacy regarding the required documentation of student performance, the participant continued to explain his instructional methodology as different from but more effective than the established grading system used by the school. He maintained that his students learned best in laboratory settings and his grading method of observation according to industry standards best reflected student preparation for successful career transition.

Across the interviews, T&I participants demonstrated high self-efficacy for hands-on instruction. In addition to hands-on instruction reflecting their own learning experience, they described real-world application and demonstration of skills attainment as logical for this form of pedagogy. One participant stated,

> Most of our curriculum is skill driven. So when a student can actually take the topic you're teaching them and then apply it immediately to a hands-on activity, they gain more from it. It makes sense. When it's all lecture driven it's cognitive. It's not psychomotor.

Although participants were united on the benefits of hands-on instruction, they recognized the need to develop other pedagogical practices. Development of pedagogical

skills such as lesson planning and student engagement are key factors in the development of T&I teacher self-efficacy. A participant addressed the lack of training for T&I teachers:

> We don't have the background in curriculum development that an academic teacher has. I was never taught how to formally write lesson plans and why they have to be written a certain way. Again, a lot of the things that academic teachers were trained to do, we've not had that training. So, there are times when academic teachers are talking about things that I know [are] over my head, maybe not because I am not smart enough to grasp it, it's just, I've never heard it before. So, if I'm feeling that way, I'm pretty sure that the other T&I teachers are feeling that way.

One participant shared his experience with planning in the industry. He stated that planning was not his strong point in his industry and continued to be a challenge as a T&I teacher. He acknowledged his deficit in this area but pointed out the contrast between the classroom and industry where flexibility outside a plan is a valued skill:

> I was a person that was a horrible planner. I didn't plan for much until I became a teacher. In industry, I just did things. If mistakes happen, you work through them. You can't plan for contingencies. You just got to go ahead and do it.

Although lesson plans provide a regimented daily schedule of learning activities, the nuances of the activities contribute to the success of the lesson plans. One of the pedagogical skill sets that is required in planning a lesson is student engagement and participation. A number of T&I participants expressed initial challenges with engaging students during instructional delivery. During the interviews, participants discussed student engagement during lecture and suggested the lack of self-efficacy for T&I teachers to engage students during lecture. One teacher said, "During the whole class period, they had to suffer, 2 hours and 20 minutes of me talking. They are tired of my voice, I'm tired of my voice, and they checked out in the first 15 to 30 minutes."

A different participant pointed out the challenge of dealing with disengaged students. He called it "the most difficult obstacle." He continued, "If all of your time is directed toward trying to maintain disengaged students, you lose the engaged students." Nevertheless, the participant pointed out, "We have never been taught—this is how you do this, this is how you do that. We are all kind of operating from—this is what I would do if this were happening in my industry."

Participants described two main options for the development of pedagogical self-efficacy. The first was that of school leadership. One participant stated, "School leaders have to show other folks how to engage students." Another stated,

> Administrators provide good feedback when they observe and identify the good, the bad, and the ugly. You definitely hear about it during the postobservation meeting. They will often share best practices in areas that need improvement and recommend that we share good ideas with other teachers.

The second main option for T&I teacher pedagogical development is collegial interaction. A number of participants expressed learning from their colleagues as a key developmental benefit:

> I think I've learned a lot from co-teaching and watching my peers. I certainly do not have the best way of doing probably anything. There are other teachers that do things 10 times better than me. Being able to see things done in different ways just make me a stronger teacher.

A different participant espoused the benefit of using other teachers' strategies. He stated, "One thing I learned in one of my teaching classes was the best teacher's a thief." He continued, "You see something you like, take it. Make it your own and apply to your classroom."

Theme 2: Classroom Management

The challenges of classroom management represented a constant theme across participant interviews. Although most of the participants had experienced some level of delivering instruction to their industry colleagues or other adults, they were challenged by school-aged student classroom behavior. One participant stated, "I would say the biggest difficulty is classroom management." The participant continued:

> In a college setting—and I've taught both, I've taught in college settings, as well as T&I. When a person has paid X amounts of dollars to sit in your class they're going to pay attention. If they are having an off day and they don't want to be there, they stay home. Dealing with a child who wants to sleep or talk during class because they do not want to be there is a huge obstacle.

During one interview, the participant mentioned T&I teacher reservations related to classroom management. She noted that T&I teachers often have little to no experience with disciplining or managing students. She continued to explain that they were hesitant to discipline students in the same manner they would as a parent and fearful of school law procedures that might result in their being taken to court or terminated. T&I teachers expressed low self-efficacy with determining appropriate discipline for the classroom. One teacher stated that he set classroom expectations early in the year and adjusted as he got to know his students:

> When I first came onboard, my administrator told me to lock it down and as the year goes on, I may want to release some things. I think that's a good strategy because in the process, we get to know the students and they get to know us. So, we need to be more fair but more strict in the beginning. Classroom management, I think, is a big issue.

Other T&I teachers also revealed their strategy of starting out with very strict rules. One teacher said, "There's always someone that want[s] to challenge you. You have to prove that, 'When I say something, I mean it.' Follow through with your

statement if they don't cooperate." He continued, "I handle the majority of my disciplinary problems in the classroom. If I send them to the office, I've done what I can do; now it's their time." Another participant described bouts with extreme anger when students did not behave in his classroom:

> I used to get angry a lot. I would sometimes display my anger. Sometimes I would act out my anger just to try to keep them in line. I had to figure out one thing: Do I really want to do this? If so, I had to get control of my classroom. I realized that when they figured out how to push my buttons, they did. And so then I realized I am not gonna let that happen anymore.

The participant continued to describe his experience and on-the-job training as the basis for improved self-efficacy in classroom management. He explained that he had established a system that promoted proper behavior. He concluded as follows: "If they cross me, then I've got something for them."

Theme 3: Transfer of Content Knowledge

Many of the participants described challenges with transferring their knowledge to the students. Throughout the research process, participants identified students that were not learning the content as misplaced students or students that were not interested in learning. The participants that seemed to have low self-efficacy in the transference of content knowledge often placed the blame on their students' placement or interest level:

> I identified the ones—probably within the first couple of days—that I did not think would make it, and they didn't. I think before they come to these programs, they should have some mechanical aptitude test because there's so many of them that are not mechanically inclined that end up in T&I courses. It is unfortunate for them and it is unfortunate for the teacher as well.

When asked to describe his biggest classroom challenge, the same participant said, "student engagement." The remainder of the interview indicated that the participant

was either unwilling or unable to deliver basic mechanical skill instruction to his students.

Section III: Performance Measures of Trade and Industrial teacher Self-Efficacy

During my interviews with T&I teachers, I examined the factors that influenced their development of self-efficacy. In the review of the factors, patterns undergirding those factors were established. I began to notice performance measures of teachers. The performance measures were competence, motivation, and self-regulation. These patterns indicators of their levels of self-efficacy.

Competence

Teachers who demonstrated higher levels of self-efficacy in a specific area also demonstrated high levels of competence in that area. One participant who enjoyed using theory as an instructional methodology and demonstrated high levels of self-efficacy in pedagogy stated, "My passion, like I said, is theory, and I have helped edit three editions of the course textbook, the CLIC international book, and two nail technology books." Conversely, when asked about classroom management, another participant with low self-efficacy in that area also demonstrated low competence, as he stated,

> I'm smarter than they are. I have been around longer than they have. So how am I gonna deal with it? How am I gonna outsmart them? To get them to do what I want them to do. I mean, I'm constantly working on that but it is difficult. Especially when they realize they can push my buttons. But, it is getting better as time goes on.

Experience

Throughout the interviews, participants indicated the benefit of experience with development of competent practice as a T&I teacher. Many of the participants had

experienced training or teaching adults in their industry prior to becoming a T&I teacher; however, they expressed a challenge with teaching the secondary age group:

> That was probably the hardest thing, having to come in to deal with the age group of high school students versus being with adults, you know? When we are out in the industry we're dealing with adults, and I mean it's been rewarding and it's been a challenge, both, you know?

Yet, the experience of teaching or training adults had provided some competence for the T&I teachers in their roles and responsibilities:

> I was already an instructor in my field. Therefore, I was able to build lesson plans and curriculum. That is what really gave me the foundation of learning how to teach and how to actually work with different types of modalities to teach different types of learners.

Another participant said, "I was in industry. I've used students from vocational schools as helpers and [given] additional training. So I was already teaching before I became a teacher." As previously noted, participants recognized the differences between training or teaching adults and secondary students; experience as an instructor or trainer provided a positive impact on their level of competence and development of self-efficacy.

Other participants credited their experience with the content as a basis for their level of competence. Some suggested that their content knowledge levels exceeded most other teachers because of their development through industry experience. "Being that I am well-rounded in all areas of my industry, I think that's probably a huge strength in that I am able to convey them to my students," said one participant. Other participants echoed the same sentiment; one stated,

> I learned barbering, as well as all other cosmetology concepts while in my industry. So it just makes me a well-rounded individual, and able to deliver different concepts to my students. Some of them come in and they go into cosmetology, but may want to be a barber. Some of them may want to be a nail tech, so I can address it because I have been a nail tech. So you know, I think—I have had a lot of experiences with a lot of things.

Professional Development

Many T&I participants mentioned the benefit of professional development to their practice as teachers. Professional development usually occurs in both formal and informal formats. In this case, formal training consisted of established coursework or training, whereas informal training was often on-the-job or consisted of industry learning opportunities. Although some participants indicated that formal training positively impacted their development of self-efficacy, others preferred industry-level professional development.

When asked about the benefit of the formal coursework required for T&I teacher certification, one participant stated, "Those three courses certainly helped pave the way for a better understanding of how education in a high school setting of career and technical school worked." On the other hand, another T&I teacher's experience in the industry impacted her value of the required coursework differently. She stated,

> To be perfectly honest, I can't see where it made a whole lot of difference, one way or the other. It might make a huge amount of difference for somebody else. The nature of the work that I had in my industry prepared me for my current role as a teacher.

Another participant preferred formal conference learning; he stated, "I try to go to conferences. Sometimes it might be ways to teach a particular subject. It might be how to better interact with students. I look for opportunities to improve my teaching skills at conferences." Yet, another participant expressed preference for the informal format. He stated, "I never felt that I got a lot out of those classes. I felt like a lot of those things were common sense. Informal industry training provides current information for me and improves my knowledge of the industry." He continued to explain the benefit of industry

training on specific industry tools: "For example, if I didn't use a type of sensor before, and I didn't know how to program it, now I have to reach out to industry because I want to stay on top of the industry technology." Other participants aligned themselves with the benefit of returning to the industry for on-the-job training; one participant said,

> The Department of Education does not always look at continuing education points from industry for renewing licensure. But if you are out of the industry for 23 years, what do you teach these students? It would be different if I taught English or anatomy. Every 3 years we have something major that has changed, either in the protocols or how we are doing things. If the teacher does not stay up with that, then they're preparing a student who basically goes out unprepared.

Collegial Interaction

At least two thirds of the participants indicated that their development of competence was largely a result of collegial interaction. They suggested that although formal and informal training was beneficial, much of their development was a result of their teaching environment. They reported interaction with administrators, other teachers, and mentors as key components of their teaching practice.

One participant said of the T&I staff at his school, "We have very similar stories. It is just different content. But we have very similar stories and interactions with our students. Therefore, we learn a lot from each other." The participants described sharing of ideas and practices with each other as a common occurrence. A participant mentioned a conversation at lunch during which she said to another T&I teacher, "Okay, what are you doing in your classroom that works? What do you like about it? How do the kids respond?" She continued to emphasize the number of times this occurred between T&I teachers in her CTE School.

During one interview, the participant explained the benefit of communicating with other T&I teachers outside her teaching environment. She recalled its being very informative during her initial T&I teaching experience:

> I started calling other teachers to see what they were doing. I called the state department; they provided me with other teacher names. They actually gave me a couple of phone numbers to the school. I got some really helpful tips from teachers at the other schools that we weren't doing yet, but I really liked.

The opportunity for T&I teachers to have a veteran teacher as a mentor to help guide and evaluate their teaching practices made the transition from industry to the classroom less challenging. Across the interviews, participants recognized the value of participating in a mentorship as an important aspect of the development of their competence. The following statement represents the sentiment expressed by the participants:

> I think it was important to my development as a T&I teacher to participate in the mentorship. I was provided with a teacher who I was able to work alongside who kinda ushered me into all of the things that were required for secondary education, which is very different from what I had to do when I was teaching in the industry.

Many of the participants engaged in formal mentorship programs; however, the interviews revealed that mentorships happened outside formal designations or assignments. Teachers tended to help each other with or without formal assignment.

Motivation

Trade and industrial teachers often choose to teach because they are motivated by the idea of preparing students to enter their profession. One participant stated,

> I am proud of where I am and what I did to get here at an early age. I remember how I was learning and how challenging it was, and I always said if I ever got the opportunity to teach, I would teach them like I was taught. A teacher in this industry brings new ideas out of the students, challenges the student to bring those ideas to fruition. Who knows? We could be training the next Einstein of this industry.

Another participant said, "I enjoy teaching and trying to share what I have learned. My biggest goal is getting them in the industry and keeping them there." For many T&I teachers, their development of self-efficacy is motivated by student performance, industry feedback, and their reputation as a teacher.

Student Performance

Participants were asked to explain the factors that motivated them to continue their development of self-efficacy as T&I teachers. Across the group of participants, student performance was a constant response to that question. One indicator of student performance that was echoed by numerous participants was student transition to the industry. One participant required her students to develop portfolios of the competencies learned in her class. She said, "They need it to go out and get a job, and it needs to be refined regularly for our industry." Another participant said, "The biggest thing that motivates me is that I need my kids to get a job. So I'm in constant contact with my industry to learn new industry standards and make sure my students are ready."

The T&I participants also identified student performance on assessments as a motivator. One example of how students' assessment motivates T&I teachers to continually improve their self-efficacy is student attainment of industry credentials. One participant said, "The need for professional development becomes clear when students take credential tests. It informs the T&I teachers if they are teaching relevant information and if the students are grasping it or not." A third participant stated,

> It's nice when you see the light bulb come and somebody gets what you are trying to get them to understand. Especially when they demonstrate understanding on a test or quiz or even if they are able to demonstrate by completing a task.

Teacher Reputation

The T&I teachers in this study had demonstrated strong connections with their industry. In addition to their industry connections, they had established a sense of responsibility to provide a pipeline of well-prepared employees. Consequently, they were motivated to continue the advancement of their industry knowledge to that end:

> Well, you know, you never want somebody to go, "Oh, yeah. She's not very good at what she does." Oh no. So, you want to keep your skill set up so that people are glad to see your students walk in the door. I stop by the clinic on the way home quite frequently, come in on weekends sometimes, commune with the four-leggeds, give out some pills, start some IVs, and that kind of thing.

The participant continued to explain the requirements of returning to industry for professional development in an effort to maintain industry licensure.

Industry Feedback

During the interviews, one participant expressed concern about losing his industry skills upon transition to teaching. This fear became another motivator to solicit industry feedback on his teaching performance:

> You know, that was probably my biggest fear when I took the job, and I know I am not the only one because my colleagues in Richmond said the same thing. You're not in industry, every single day. Industry changes so quickly that there are procedures out there that were not out there when I was in the field. I am not as familiar with them as I would like to be.

The participant continued to emphasize the importance of an industry advisory council. He utilized the advisory council to help provide industry standard updates. An additional motivator was the use of guest speakers from the industry to reaffirm his instruction to the students. He stated, " When they hear a guest speaker basically saying the same thing that I said, I think it reinforces why I want them to understand the significance of a concept."

In a separate interview, another participant explained her strong desire for industry feedback to ensure she was teaching the proper material:

> I meet with them all the time—very fortunate. We meet every year in April. And we go over the transition from high school to college, then out into the workforce. Then I meet with the Coast Guard, and the Air Force, Navy. And that's usually in October. During career days, I see who comes, and I get their cards. I invite them to provide feedback for my class and to make sure I am teaching what I need to be for those related courses.

She continued to explain the use of industry partner feedback to determine additional course support and to garner resources for classroom use.

Self-Regulation

The development of self-efficacy for alternatively certified teachers, as is the case for T&I teachers, is largely dependent upon their ability to self-regulate their learning. T&I teachers must develop their self-efficacy with consideration of industry standards as well as teacher practices. One participant asserted,

> Education is not the same as business. Sometimes, one is lacking or the other; trying to stay ahead of them both, I think, is important for the teacher. I think you'll feel more self-confident, and students will have more success when they leave your program.

Industry Standards

The aforementioned participant's statement is aligned with the sentiment of many participants across the interviews. Student performance, alignment with industry standards, and their own documented teacher performance guides T&I teachers' levels of self-regulation. As previously noted, student performance is measured using assessments such as tests and credential attainment. One participant described his self-regulation as being motivated by student performance:

> If the majority of my students are not performing well on a task or do not pass an industry credential exam, I have to review my process as a teacher, adjust, and re-

> teach. That lets me know how I am doing with my students. I would imagine all teachers do the same.

The participant further explained his process of measuring individual student performance as well as collective student performance: "Many of my students are special needs, and others learn differently. I have to make sure they are all being successful in my class." He continued, "I look at individual student performance and overall class performance. Then I figure out what I need to do."

Another participant's main focus, however, was student transition. She identified employment as her main focus and self-regulation measure. She stated, "I mean, getting them employed is my biggest goal. If I can teach them work ethic, they will stay employed in the field and that's my measure of success."

Another participant indicated that he used pretests and posttests as measures of student performance and self-regulation:

> And then we have our pretest, midpoint, and posttest. I think that's a good thing to do. That helps us get on track and stay on track. We review the test and see where the class is doing well and where it is not. I can look at trends in their scores on a daily and weekly basis. This allows me to keep my fingers on the pulse of what students are learning.

The participants in this study expressed strong interest in using student performance to objectively measure their development of self-efficacy.

Stakeholder Input

A participant explained his use of surveys as a self-regulating tool for his professional development:

> I survey my students in the beginning of the year to get a feel for their expectations in the class. Then I read the surveys to make sure I am aware of their thoughts. I also use this to make sure they know what the class is about. The surveys ask them to explain what they expect to get out of the class. I use

> that to measure my success at the end of the year. I also survey parents and industry partners to measure my success with other stakeholders.

This participant acknowledged the importance of parent and industry involvement as a part of his self-regulation. He stated, "Parents know what their children are expecting from my class and what they are expecting for their children. Some of them want to participate in their children's learning process and this is a good way to do so." He continued,

> Industry stakeholder input informs me of the expectation upon students' transition to the workforce.... I do go out to industry, and I do go to the shops and see what's going on. I talk with industry representatives. They have good insight on what's going on all the time. I am always asking them, you know, "What's new—the newest and greatest things going on out there right now? What's changing all the time? Am I teaching everything that they are doing on the outside?"

The participant extended his comment on industry connections as he stated, "I'm a firm believer that a T&I teacher needs to be well versed in his industry and know all the aspects of it and be willing to keep up to date with everything that's going on out in the world."

A different T&I participant explained his motivation for self-regulation. He acknowledged his role as the teacher with the responsibility of student preparation for career transition. He accepted responsibility for preparing his students for interviews by teaching soft skills as well as hard skills. He said,

> I know what my industry expects of a potential employee, so I prepare my students—'cause it's competitive. I want my students to get those jobs. I know my reputation is on the line when they go to an interview and they can't answer the questions. That reflects on me. So I really work hard to make sure students are prepared before they go.

One participant said of self-regulation: "You have to acknowledge the truth about yourself and about your situation. You can't do that with rose-colored glasses. You have to realize that these students' futures are at risk."

Administrator Feedback

Across the interviews, participants spoke of school leadership feedback as a self-regulation tool. They explained that administrator feedback is valuable when there are clear goals and objectives. One participant stated, "I appreciate the teacher evaluation process when it is objective." He welcomed the administrator's reviewing strengths and weaknesses during the postobservation. He said, "It lets me know what I need to work on."

During one interview, the participant expressed concerns about administrator observation of content knowledge:

> Each of us is teaching something so incredibly different. Sometimes we kinda feel like we are out there on our own. Even though there is administrative support, if an administrator comes into my classroom and says I am doing a good job, he may not understand everything I am teaching. However, I do value the feedback on methods and professionalism. That's where I need to know if I am doing the right thing. If not, I will make the necessary adjustment or get training.

The participant continued to express the benefit of the school leaders' reviewing class scores and collective data for student success. She stated, "There is a benefit to having a second eye look at our data. There is almost always a data point that has been overlooked, and administrators have an eye for that kind of stuff." She acknowledged the benefit of administrators' constructive feedback and identification of professional development options.

Conclusion

In Chapter 4, I have provided detailed accounts of participant experiences as reported through open-ended interviews. Participant experiences were unique to their teaching practices; however, common themes developed around the topics of pedagogy, classroom management, and transfer of content knowledge. Additionally, the aforementioned themes were dependent upon the T&I teacher level of competence, motivation, and self-regulation. The results of the participant interviews provided the researcher with a greater knowledge of benefits and challenges related to T&I teacher development of self-efficacy.

CHAPTER 5

INTERPRETATION, IMPLICATIONS, AND CONCLUSION

Introduction

In Chapter 4, I presented three factors, explored through 12 interviews with trade and industrial teachers, that impacted the teachers' development of self-efficacy as related to teaching practices. As discussed in Chapter 3, these factors are teacher pedagogy, establishment of content knowledge, and classroom management. During my research, I discovered and noted in Chapter 2 that self-efficacy requires affirmation through performance measures. I used three performance measures that undergird each of the aforementioned factors: competence, motivation, and self-regulation. During interviews, each of the performance measures was reviewed in an effort to establish the participants' levels of self-efficacy as related to the factors.

I interviewed 12 T&I teachers from CTE technical schools in Southeastern Virginia to review the development of self-efficacy for T&I teachers. During the interviews, I used open-ended questions to explore teacher levels of competence, motivation, and self-regulation. While conducting the interviews, I related each performance measure to the factors of pedagogy, content knowledge, and classroom management. I reviewed the performance measures' influence on each of the factors. During the review of each interview, I interpreted each teacher's level of self-efficacy for each of the three factors. Three teachers determined to have the highest degree of self-efficacy on each of the three factors and three with the lowest self-efficacy were contacted a second time and asked to describe their experience and perceived value of

industry training and the required teacher training for certification and recertification. All participant responses were interpreted and categorized for significance as well as commonalities.

The primary purpose of Chapter 5 is to combine the three significant factors and the performance measures into a comprehensive representation that offers some understanding of how T&I teachers develop their self-efficacy for teaching. In this chapter, I use a phenomenological approach to explain how T&I teachers described their experiences (Moustakas, 1994). I continue to follow Moustakas's guidelines by analyzing individual experiences as well as the collective experiences of all the participants. I analyze each individual participant's experience with consideration of context and the participants' collective experiences beyond contextual application. I reviewed the literature in Chapter 2 and compared the existing body of knowledge to my analysis of the development of self-efficacy for T&I teachers. Next, I reviewed the alignment of theory and the reality of practice to produce the findings of this study. I conclude the study with implications for further research on the development of self-efficacy for T&I teachers and related topics. Finally, I present this study's contribution to the development and use of trade and industrial teachers for preparation of highly skilled employees.

Interpretation of Findings

My goal in this research was to provide a clearer understanding of the essence of T&I teachers and their development, as well as to make the connection between T&I teacher practices and preparation and their confidence as educators. To that end, I have established key findings that capture several components reflecting the reality of T&I

teacher development of self-efficacy. Figure 1 illustrates the key components of T&I teacher self-efficacy.

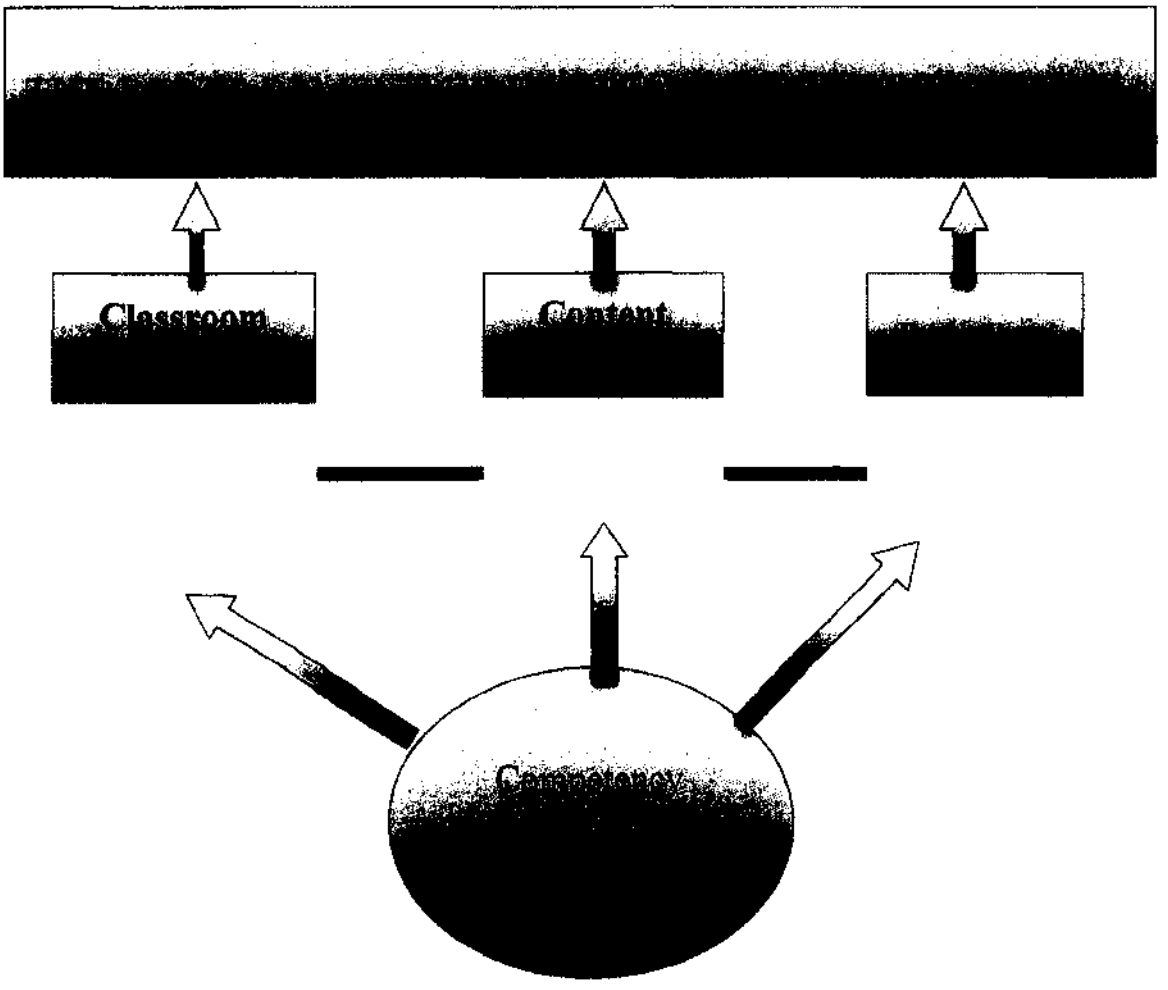

Figure 5. Key components of T&I

This research was based upon three specific research questions. The researcher used each of the research questions to determine exactly how T&I teachers develop self-efficacy. Through interviews conducted during the study, the researcher inquired about factors and performance measures and how they impact teacher professional growth and practices. Across the interviews, participants reported that industry experience better prepared them for teaching their content; however, they indicated that they lacked the

pedagogical skills to provide sound teacher practices and establish a classroom environment conducive to learning. Consequently, the repeated themes of strong content knowledge, poor pedagogical skills, and challenges with classroom management were identified throughout the interviews.

Content Knowledge

The first major theme—transfer of content knowledge resulting from T&I teacher work experience—was largely consistent with the literature. The literature identified content knowledge developed through work experience as a key component of T&I teacher success. It even suggested that T&I teacher experience was not necessary to improve teaching skills but to ensure that the teachers were subject matter experts with advanced content knowledge (Swackhamer, 2009; Walter & Gray, 2002). Yet, the literature continued to suggest that content knowledge does not supplant formal teacher training (Scribner & Akiba, 2010, p. 29). Nevertheless, content knowledge does impact T&I teacher practices because it provides teachers with an understanding of desired outcomes.

Although participants identified their content knowledge as one of the largest advantages of being a T&I teacher, they were in agreement with the literature on their challenges related to transfer of content knowledge to students (Scribner & Akiba, 2010). Some participants attempted to place blame regarding their challenges with knowledge transfer on the students. During the interviews, they expressed frustration with students' performance on assessments and demonstration of knowledge acquisition. The participants occasionally espoused concerns about student misplacement and lack of interest as reasons for poor performance on assessments; however, the majority of the

participants conceded the need for formal training in conjunction with content knowledge to maximize student learning outcomes and transfer of content knowledge.

Although the participants were rated above average for their ability to transfer content knowledge, as depicted in Figure 1, there was no consideration of student age group. In alignment with the literature, many of the participants identified challenges in delivering content to high school students. It was discovered that many of the participants arrived at the secondary classroom having some experience with teaching or training adults in their respective industries. Yet, they struggled with the transference of content knowledge to students of high school age. They pointed out that high school students appeared to be disinterested or disengaged, resulting from a lack of investment.

Across the interviews, participants noted the advantages of collegial interaction and industry engagement, as they overcame the challenges of teaching a younger population of students. Participants credited industry feedback and engagement as a foundation for their competence in the transfer of content knowledge to their students. The performance measure of competence was identified as a key component of the development of self-efficacy. The literature described a correlation between the accomplishment of one's task and one's competency. In addition, the correlation provides a comparison to the performance of others with similar tasks. Consequently, feedback from industry provides T&I teachers with a comparative analysis of their students' performance as related to industry standards. Subsequently, this analysis undergirds the competence of the T&I teachers' ability to transfer relative content knowledge to their pupils.

Student performance is a key indicator of teacher competence. The participants in this study identified collegial interaction as a means of establishing best practices that yield increased student performance levels and improve teacher competence and practices. The literature acknowledged the benefit of social persuasion in teacher development and professional growth. It suggested that teacher interaction with veteran teachers is a prominent form of professional development and the establishment of competent practices. Moreover, successful teacher development programs place emphasis on relationships among teachers in an effort to establish collaboration and therefore increase student achievement. Throughout the participant interviews, interaction with veteran T&I teachers was identified as an avenue for the development of competent teacher practices and instructional methods.

Throughout the interviews, participants identified opportunities to learn from colleagues as one of the more desirable professional development opportunities. They described both formal and informal collegial collaborative experiences. Each experience was identified as an opportunity to learn about different instructional methodologies, such as student engagement strategies and lesson plan development for transfer of content knowledge. The participants expressed an increased confidence level when provided an opportunity to learn from each other. They also emphasized that this learning took place in the teacher's lounge, during breaks, between classes, and in other informal settings.

A more formal collegial interaction was identified as an effective teacher development strategy: the strategy of mentorship. Many interview participants identified the provision of a mentor as a key factor in the establishment of competent teacher practices. One participant described the absence of a mentor as a travesty. She expressed

frustration that she was simply given her keys and pointed in the direction of her class. Other participants developed a greater appreciation for teacher practices after being provided mentors. Participants perceived that mentorship programs increased teacher tenure and established competent teacher practices. Therefore, the establishment and transfer of content knowledge is significant in the development of self-efficacy of T&I teachers.

The second performance measure related to the transfer of content knowledge was motivation. Motivation was supported by the literature as a determining factor of T&I teacher engagement on specific tasks. According to the literature, an individual's level of performance motivates and informs his or her development of self-efficacy. Individuals with high self-efficacy approach challenging tasks as motivators; however, individuals with low self-efficacy on a given task display a lack of motivation to overcome challenges. Motivating influences of outcomes are affected by self-beliefs regarding efficacy. This notion was demonstrated during the participants' interviews, as they reported strengths in hands-on instruction and content knowledge, while admitting to challenges related to lesson plan development, documentation of student records, and instructional delivery methodologies.

The participants' interviews revealed their willingness and desire to complete tasks with which they were comfortable, but they acknowledged challenges in completing teacher-related tasks perceived as difficult or unfamiliar. Although this finding is in alignment with the literature's presupposition regarding high and low self-efficacious behaviors (Pajares, 1996), participants in this study indicated motivation to deliver less

desirable subject matter in an effort to maintain their teacher reputation, student transition rates, and high teacher performance evaluations.

In the interviews conducted during the study, multiple participants explained the importance of their teacher reputation among their industry colleagues. Participants viewed their students' performance as an indicator of their industry knowledge and ability to transfer their content knowledge. This knowledge and ability were demonstrated through student performance during internships and during their transition to industry as new employees. Participants expressed great concern about releasing students to industry who were not well prepared for all aspects of the industry. Therefore, in an effort to maintain or establish a positive reputation, T&I teachers are motivated to develop efficacious practices in the face of challenges with instructional delivery practices of content knowledge.

The T&I teacher participants recognized their lack of teacher-related training and its influence on their ability to transfer content knowledge. The literature pointed out that the majority of T&I teachers are without teacher preparation training and may lack the skills to transfer content knowledge to students (Burns, 2008). It continued to emphasize the requirement for T&I teachers to customize instruction for student transition to the workforce; however, T&I teachers enter the classroom as content-level experts who have acquired much of their expertise through on-the-job training. Consequently, the need for T&I teachers to self-regulate their learning becomes paramount to their success of transferring content knowledge to their students.

Across the interviews, participants reported that requirements for self-regulation were informed by their student performance ratings, industry standards, and stakeholder

feedback. Each of the aforementioned measures is hinged upon students' ability to demonstrate acquisition of content knowledge through performance assessments, practical application, and display of soft skills. Participants indicated that feedback from industry on student performance guided their instructional strategies and indicated the need for professional development. They continued to suggest that ever-changing industry standards fostered their need to maintain a connection with industry. In addition, such a connection provided an opportunity for T&I teachers to identify areas for their own professional development.

Participants pointed out that the challenges for T&I teachers related to the requirement to maintain both industry and teacher performance standards; however, they had concluded that the approach for meeting these requirements was to focus on student performance as a means of self-regulation. When teaching strategies are effective, students' performance will meet industry and educational standards. Throughout the interviews, participants expressed a preference toward meeting industry standards. When students did not perform well, participants perceived a need to assess their teaching strategies and reteach concepts. Participants emphasized both individual and collective student performance to regulate instructional practices.

The literature noted the advantages held by T&I teachers, as experienced industry professionals, in preparing the pipeline of future employees; however, as pointed out across the interviews, the longer T&I teachers are away from industry, the greater the gap of relevancy. This finding suggests the necessity for industry input on teacher professional development. Participants emphasized the importance of industry direction and assistance with the continuous training to maintain knowledge of industry practices

and procedures. Therefore industry and stakeholder input feedback is vital to the establishment and transfer of content knowledge.

Pedagogy

The second major theme emerging during the interviews was the establishment of pedagogical practices for T&I teachers. The literature defined pedagogy as the "how" of teaching (Shulman, 1986). It continued to suggest that teachers must know how to command an effective learning environment if they are to meet the demands of student achievement; however, the literature pointed out that teacher practices are developed from teacher preparation experience. Yet, infused life experience and other informal methods are also components of pedagogical practices.

Study participants reported challenges with nuanced procedures such as required teacher reports and preparation of student records. Many of them argued that these procedures were outside the purview of teacher responsibility; however, other pedagogical practices such as lesson plans, student grades, and test development they found to be necessary but challenging. T&I teacher participants perceived a lack of the background of traditional teacher training or curriculum development needed to adequately perform these pedagogical practices. Study participants indicated they looked to school leaders to train or identify professional development opportunities in the aforementioned deficiencies.

Participants in the study perceived their pedagogical competence level to be challenging and lacking direction. Many indicated their dependence on school leaders to identify professional development opportunities in the establishment of pedagogical competence. Other participants, however, leaned on industry connections to develop

sound teacher practices. During the study, participants referenced teaching experiences in the industry as the foundation for their classroom practices; however, they indicated the major difference to be that of student age groups. They were not confident in their ability to teach high school students. Consequently, participants indicated that the value of formal teacher pedagogical training was the development of competence to teach high school teenagers. They valued the courses on human growth theory and instructional methodologies.

Participants also perceived the most beneficial portion of formal training requirements to be the pedagogical aspects related to the development of lesson plans and test development; however, when discussing other instructional practices such as hands-on laboratory procedures, the participants indicated that formal training was less effective. They expressed more interest in the development of competence through informal or hands-on industry training for laboratory environment. They were in agreement that laboratory experience better prepared their students for the workforce. Although lesson plan and test development were germane to teacher responsibilities, participants reported low motivation in the delivery of instruction using "academic" strategies and environments. They exhibited motivation for learning to maximize student learning in the laboratory setting.

Although T&I teacher participants identified laboratory instruction as being most representative of their industry environment, this preference undergirded their lack of motivation to establish teacher pedagogical skills in traditional classroom environments. This behavior is in line with the literature that suggested individuals avoid performance in areas of low confidence (Law et al., 2012). Several participants asserted their ability to

teach their trade yet expressed low motivation to deliver instruction in alignment with established traditional teacher environments and practices. The participants described the established pedagogical practices as outside the realistic expectations in the industry. Therefore, T&I teacher motivation for development of some pedagogical practices waned in comparison to their interest in development of instructional practices reflective of industry practices.

Participants expressed some extrinsic motivation for pedagogical practices. They desired to earn favorable performance evaluations and meet other school-based requirements. They noted the importance of maintaining their employment status as a motivation for the establishment of pedagogical practices. Across the interviews, T&I teachers reported learning pedagogical practices from observation results and participation in teacher mentorship programs. Therefore, it was established that the motivation for T&I teacher pedagogical practices was extrinsic in nature, whereas intrinsic motivation was largely connected to industry standards and student transition and performance, as well as their own teacher reputation.

The literature suggested that intrinsic and extrinsic motivation work in tandem for the best outcomes of a successfully self-regulated individual (Eden, 2003). T&I teacher participants, however, expressed low interest in extrinsic motivation for self-regulation and increased interest in the intrinsic benefit of self-regulation. This notion was apparent as participants emphasized the engagement of their students and themselves in the competitive nature of student transition to employment. Participants wanted to ensure their students were employable. Along those same lines, participants noted the importance of the establishment of their teacher reputation, as it related to student

knowledge of industry practices and student performance. Therefore, T&I teacher participants' self-regulation of pedagogical practices is largely contingent upon the requirements for teacher reputation and performance evaluation, as well as student transition to employment.

Classroom Management

The literature indicated classroom management to be the second greatest area of difficulty for teachers. The establishment of rules and procedures, student personalities, and classroom organization were identified among the greatest challenges (Casey et al., 2011). During the interviews, T&I teachers echoed the literature. They expressed frustration with student behavior, engagement, and responsibilities within the learning environment. They reported a lack of knowledge regarding legal and procedural responses to student behavior.

Participants cited classroom management as one of the main challenges for T&I teachers. During the interviews, teachers demonstrated low competence in the area of classroom management. More specifically, they were challenged with the age group of secondary school students. One participant acknowledged second-guessing his decision to become a T&I teacher. Another participant mentioned the removal from his classroom of students who did not behave. Other participants informed the researcher of the teachers' fear of negative repercussion if they used unacceptable disciplinary measures. Nevertheless, participants suggested that their own classroom management had improved over their years of teaching experience.

Across the interviews, participants cited experience as the main reason for increased competence in classroom management skills. They used the strategy of

implementing a very strict classroom management procedure and releasing some restrictions as the school year progressed. A number of participants subscribed to the aforementioned strategy. Some of the participants were hesitant to refer students for disciplinary action for fear of negative evaluations or observations of their own classroom management by peers and school leaders. Consequently, the participants acknowledged the establishment and implementation of classroom rules and procedures as necessary measures to promote environments conducive to learning in T&I classrooms.

Interview participants' motivation to establish good classroom management rules and procedures was grounded in their desire for successful student learning outcomes. They cited the value of understanding student personalities and values as a means to that end. They noted that successful classroom management practices require student engagement and the use of relevant concepts and points of interest. Parent engagement and communication was also identified as an effective strategy for classroom management. T&I teacher participants also used collegial interaction to establish best practices for classroom management.

During the study, participants reported self-regulation practices in their classroom management: monitoring the number of classroom management-related incidents encountered over the school year. They expressed concerns about proper disciplinary and student-monitoring procedures when results reflected increased disciplinary infractions. Participants described the implications for student performance when classroom management challenges were increased. Therefore, they sought direction from colleagues and school leaders for effective classroom management strategies. Thus, according to the participants, the challenge of classroom management required consistent

review and warranted constant self-regulation of practice, as it was one of the main T&I teachers' obstacles.

New Knowledge

This study provides interesting and new knowledge related to the research presented in Chapter 2: review of literature related to the development of self-efficacy for T&I teachers. The literature was aligned with the findings of the T&I teacher selection and teacher certification process (Darling-Hammond et al., 2002). Additionally, the literature review supported the current findings related to the benefits and challenges associated with T&I teacher professional development and work experience (Burns et al., 2005). The research reiterated T&I teacher challenges with the key self-efficacy performance measures of pedagogy and classroom management (Burns et al., 2005). Nevertheless, the literature also recognized the benefit of T&I teacher content knowledge and deemed it an advantage for T&I teachers (Jones & Moreland, 2005). Consequently, the literature supported the need for further exploration of how T&I teachers learn to become self-efficacious practitioners in pedagogy, classroom management, and transfer of content knowledge (Fox & Peters, 2013). This study provides a new perspective on the motivation, competence, and self-regulation of T&I teachers and the effect on their development of self-efficacy.

This study of T&I teacher development of self-efficacy established what other researchers had concluded with regard to the strength of T&I content knowledge. For example, in this study, I found that T&I teacher content knowledge was at a premium when they entered the classroom. They were knowledgeable of all aspects of their industry and the relevant knowledge required for their students to be successful in the

workplace; however, they exhibited low competence in their ability to transfer their content knowledge to teenaged students. This revelation is logical when one considers the extensive training required for traditional secondary teacher preparation and the limited experience and training of T&I teachers with regard to instructional delivery. Although T&I teachers expressed great pride in preparing students for the workplace, their frustration with the delivery of their content was in part, a result of their lack of teacher training.

The literature discovered some disagreement among researchers regarding the necessity for T&I teachers to complete traditional teacher training (Darling-Hammond et al., 2005; Walter & Gray, 2002). Proponents of traditional teacher training suggested that such training would yield greater pedagogical practices and subsequent student success (Fox & Duck, 2001). Other researchers, however, espoused the notion that the purpose of having T&I teachers is not to develop pedagogical practice but to provide subject matter experts to develop a pipeline of employees (Walter & Gray, 2002). In this study, I found that lack of pedagogical skills was the teachers' greatest challenge.

T&I teachers were motivated to complete formal coursework and learn from colleagues regarding the administrative pedagogical tasks. They expressed appreciation for the required coursework on lesson plan development, test writing, and human development; however, there was little interest in developing pedagogical teaching skills that were not in tandem with industry or workplace standards. The participants in this study preferred continuous training from their industry on workplace standards as a basis for their teaching practices.

Another area of challenge for T&I teachers was classroom management. Research suggested that T&I teachers tend to experience classroom management problems at a significantly higher rate than their counterparts except during laboratory instruction (Schonfeld & Feinman, 2012). In this study, I found that participants' experiences reflected the literature on classroom management. Participants noted their challenge with managing students' behavior and their varying learning abilities in a traditional classroom setting; however, they seemed to prefer the laboratory because of student engagement and its reflection of the industry environment and hands-on learning activities. Additionally, the literature espoused the notion that the laboratory environment provides T&I teachers with a greater opportunity to address the students' different learning styles (Casey et al., 2011). Study participants, however, described help from experienced colleagues in developing effective classroom management skills.

Although content knowledge has been identified as the greatest benefit to T&I teacher practices, this limited study identifies the ability to transfer content knowledge as T&I teachers' greatest challenge. The study found classroom management to be the next highest challenge for T&I teachers. According to participants, this problem resulted largely from student maturity levels and the teachers' challenge with student engagement. Teacher pedagogy scored higher on the scale of challenges for T&I teachers in this study. I attribute this finding to participants' lack of experience with formal training on delivery of instruction to high school aged students.

During this study, I found interesting phenomena that were not well understood and are worthy of future research. The first phenomenon was T&I teachers' reasons for transitioning from their industry to the classroom. As I entered the field with my

interview protocol, I expected to find T&I teachers' greatest impetus for entering the classroom to be their desire to work with young students; however, I found the contrary. Most T&I teacher participants indicated an interest in developing and providing talent for their industry. In fact, when asked about their motivation to develop self-efficacious practices, the majority of their responses were related to the establishment of industry talent.

Another interesting phenomenon was that of gender performance. When T&I teacher performance was disaggregated across the self-efficacy factors of classroom management, pedagogy, and content knowledge, female participants scored higher on each factor than their male counterparts. Although the study was limited to 12 participants, the sample reflected equal members of each gender. The average ages of participants by gender were similar. In addition, review of participant demographics revealed no major disparities between genders. Each of the aforementioned phenomena provides opportunity for further research in understanding how T&I teacher gender and motivation for teaching influence the development of self-efficacy.

Implications for Practice

The findings of this study provided new perspectives on how T&I teachers develop self-efficacy in their teaching practices. The study also supported the literature, as it relates to factors and performance measures that aid in the development of self-efficacy; however, there were implications for school leaders and industry leaders that were not stated in the literature, but was brought to light during the interviews. Strong support from industry leaders is imperative, as they provide a means for T&I teachers to stay current with industry standards. T&I teachers are no longer working within their

industry; therefore maintaining strong connections with industry partners will promote continuous knowledge of relative and relevant industry standards for the development of competency based instructional tasks. Finally, while T&I teachers are not required to enroll in formal teacher preparation programs, the implications of this study suggest that the provision of internship and mentorship opportunity would greatly benefit their professional development.

In consideration of the demand for a highly skilled workforce, education and industry partnerships are a vital component of meeting the workforce needs. A key benefit for T&I teachers and their development of a pipeline of workforce employees is their own connection to their industry. T&I teachers should be provided an opportunity to return to their industry on a regimented bases to maintain familiarity with industry standards and industry development. In addition, this would provide opportunities to develop relationships with industry representatives. The results of the developing these relationships could yield continuous professional development for the T&I teacher, workplace opportunities for students and industry investment into their own future workforce.

One of the main concerns of the participants was their awareness of industry development. This repeating theme implied the need for industry advisory and guidance of curriculum. The study revealed that while education leaders and curriculum developers are well intended with their involvement of T&I teachers during the revision of curriculum, industry engagement in the process was vital. It is paramount that active industry advisory committees are engaged with T&I teachers in the development of curriculum and delivery of competency based instruction that is aligned with workplace

practices. The advisory committees should drive all decisions made about curriculum development related to student preparation for transition to careers.

The literature strongly supports the assertion that T&I teachers possess advanced content knowledge. However, the research implies a real deficit in the ability of T&I teachers to transfer their knowledge to student learning outcomes. In addition they are challenged with the provision of conducive learning environments for student development. T&I teachers are not required to participate in internships as a part of their licensure requirement. However, the study implied that areas of deficiency would be greatly reduced if internship experiences were provided for T&I teachers. It is my contention that all teachers should be required to experience instructional delivery in diverse learning environments prior to their teaching assignment.

In conclusion T&I teachers should receive advanced preparation before entering the classroom. The study concedes the benefit of their work experience. However, it revealed numerous deficits as it relates to their development of self-efficacy from a pedagogical perspective. Tschannen-Moran (2009), informed of the connection between teacher practices and their teacher preparation program. She suggested teacher preparation was key in the development of self-efficacy. Darling-Hammond (2005), implied that teachers' lack of preparation was a disservice to students. In recognition of the literature and consideration of the valuable content knowledge of T&I teachers, leaders must develop an on-ramp program for T&I teachers to ensure their development of self-efficacious practices that yield the greatest benefit to students and the pipeline of skilled workers.

Future Research

Areas for future research include T&I teacher motivation for teaching and the effect of gender on T&I teacher development of self-efficacy. As previously noted, there are some implications for the aforementioned topics that warrant further research. This limited study suggests gender division based on performance ratings of self-efficacy. In this study, females performed better than their male counterparts. A future quantitative research study should be conducted to measure female T&I teacher self-efficacy compared to that of male T&I teacher self-efficacy.

Findings of this study indicate that T&I teachers' transition to the classroom was largely motivated by the opportunity to develop a pipeline of employees for their industries. Another study should be conducted to explore how T&I teacher industry connection and employee pipelines influence their decision to teach. In addition, during the interviews, I noticed the absence of the presumption that many would expect to hold true for all K-12 teachers – the desire to work with children. This desire was not a prominent finding during my limited study. In fact, many participants identified student age group and maturity levels as major challenges in their transition and development of self-efficacy.

Future research of how T&I teacher self-efficacy is affected by student age group should be conducted to further understand T&I teacher motivation. In addition, research that measures how student behavior influence T&I teacher attrition would be useful to CTE leaders. These studies' should include a comparison of T&I teacher attrition and performance in comprehensive high schools compared to CTE centers. Such research would provide CTE leaders with knowledge of T&I teacher needs for the development of

self-efficacy. Consequently the research would improve T&I teacher preparedness for the classroom.

Conclusion

T&I teachers are subject matter experts with industry-related experience. They develop teaching skills through a combination of formal and informal training (Burns et al., 2005). Nevertheless, their development of self-efficacy as educators is task specific. This study embarked upon research to examine the development of T&I teacher self-efficacy in content knowledge, classroom management, and pedagogy. The findings were in agreement with other research but offered additional understanding of the phenomenon.

The implications of this study provide three key avenues for T&I teacher development of self-efficacy: collegial interaction, formal training, and continued industry interaction. Participants engaged experienced colleagues to develop self-efficacy for the specific tasks of classroom management, such as student behavior and instructional strategies. They indicated that formal learning related to administrative tasks such as lesson plan writing and development of assessment tools was beneficial to their pedagogical development. Nevertheless, participants expressed a strong preference for industry training in their development of content knowledge. T&I teacher participant interviews suggested that their development of self-efficacy was derived from a combination of formal and informal learning.

T&I teachers are tasked with the development of skilled professionals for the workforce. Therefore, it is pertinent to understand how they learn as educators. The traditional route to teaching does not provide adequate incubation time for the

development of T&I subject matter experts who desire to teach their craft. Each participant spoke positively about the opportunity to earn professional development credit for industry training. They asserted that it is logical when the task of preparing students for industry transition is considered; however, the benefit of formal training cannot be ignored as this study has identified its necessity. This study implies the need for a hybrid of industry and formal training to improve the development of self-efficacy for T&I teachers.

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APPENDIX A: INTERVIEW PROTOCOL

Trade and Industrial Teacher Interview Protocol

Interviewee #_____

Thank you for speaking with me today. I have planned this interview to last no longer than one hour. During this time, I have several questions that I would like to cover. If time begins to run short, it may be necessary to interrupt you to move ahead and complete this line of questioning.

To facilitate my note taking, I would like to audio record our conversation today. Please note that I am the only person with access to the recording, which will be destroyed after I transcribe today's meeting. Upon completion of the transcribing process, I will share my notes of this interview with you. If you feel as though the notes do not adequately represent what you were trying to say, I will make adjustments or destroy the recording.

This process is called member checking. Please understand that all communication collected during this interview will be kept confidential. Additionally, your participation in this research is voluntary, and you may discontinue at anytime if you become uncomfortable. Thank you for agreeing to participate.

This interview is a requirement for my dissertation project, which focuses on the development of self-efficacy for trade and industrial CTE teachers, specifically, with particular interest in how T&I teachers develop their self-efficacy in content knowledge, pedagogical skills, and classroom management. The intent of the study is not to evaluate

your performance as a T&I teacher but to use your knowledge in an attempt to learn more about T&I teachers' preparation and practices that are indicative of their self-efficacy.

Do you have any questions of me before we get started with the interview questions?

If you are comfortable, I will begin recording and start the interview.

1. Describe your T&I teacher certification process.
2. How did your experience in your industry inform your decision to become a teacher?
3. What methods do you enlist to maintain relevant industry standards in your classroom, and what motivates your efforts?
4. What concepts or tasks do you enjoy teaching most, and what are your least enjoyable? How do your students perform on those tasks?
5. How does your industry experience impact your ability to plan and deliver instruction?
6. How does your school and teaching environment impact your professional development?
7. What aspects of teaching present the greatest challenges for you as a T&I teacher?
8. How do you identify your own need for professional development and self-improvement within your teaching responsibilities?
9. Is there anything about T&I teacher development of self-efficacy that I haven't asked but you believe I should know?
10. Do you have any closing remarks or questions?

Follow-Up Questions

1. Describe your classroom management style and how you developed it.
2. How do you learn instructional practices to address students with different learning styles?
3. Where are the most valuable professional development opportunities for T&I teachers?

Thank you for sharing with me your time, expertise, and insight into the experience of T&I teacher professional development. If you have any questions after this interview or would like to add something to our conversation, please do not hesitate to contact me. If I have additional questions for clarification or once I begin to transcribe today's interview, may I contact you?

APPENDIX B: IRB

OLD DOMINION UNIVERSITY
ODU A PASSION

Office of Graduate Studies
210 Koch Hall
Norfolk, VA 23529
Phone: (757) 683-4885
Fax: (757) 683-5499

Result of Doctoral Examination or Requirement
D3

A separate form shall be submitted immediately following completion of EACH examination/requirement.

Student's Name: Corey L. McCray UIN#: 00268935

College: Darden College of Education Program: PhD in Education (Educational Leadership)

This is to certify that the student above took the exam option(s) checked below:
(Signatures of appropriate chair or examiner or committee members required for all examinations.)

	Pass/Fail	Chair Examiner (Print)	Signature	Date
Diagnostic Examination				
Research Skills Examination (specify skill)				
Foreign Language Skill Examination (specify skill)				
Completion of Course				
Candidacy Examination	P	Jay Scribner		4/3/2015
	Oral ☑ Written ☑ Both ☐			
Dissertation Prospectus Oral Dissertation Defense Examination				
Other (specify requirement)				

Remarks:

APPENDIX C: IRB EXEMPTION DOCUMENTATION

Please note that Old Dominion University Education Human Subjects Review Committee has published the following Board Document on IRBNet:

Project Title: [758408-1] The Development of Self-Efficacy for Trade and Industrial Career and Technical Education Teachers Principal Investigator: Karen Sanzo

Submission Type: New Project
Date Submitted: May 13, 2015

Document Type: Exempt Letter
Document Description: Exempt Letter
Publish Date: May 22, 2015

Should you have any questions you may contact Carla Foster at cfost001@odu.edu.

Thank you,
The IRBNet Support Team

www.irbnet.org