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**THE RELATIONSHIP OF PENNSYLVANIA CAREER AND TECHNICAL  
EDUCATORS' WORK ENGAGEMENT TO SATISFACTION WITH CTE  
TEACHER PREPARATION COURSEWORK**

A Dissertation in

Workforce Education and Development

by

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## ABSTRACT

Career and technical education (CTE) teachers in Pennsylvania typically enter service without teacher certification and little or no pedagogical training. They are usually hired on the basis of their industry experience and technical expertise and receive their teacher certification and pedagogical training while they are employed as teachers. Research has indicated that, because teacher quality matters so much to student achievement, it is essential that Pennsylvania CTE instructors gain the greatest possible benefit from their certification training (Bottoms, Egelson, Sass, & Uhn, 2013; Cramer, 2004; O'Connor, 2012). On the other hand, since they receive this training while they are serving as teachers, it is important to consider how workplace factors may influence how much benefit they receive from this training. The following study investigated the correlation of Pennsylvania CTE teachers' levels of work engagement and their degree of satisfaction with certification coursework received while in service. It also measured the correlation of school administrative structures with both work engagement and satisfaction with certification coursework. The results demonstrated that there is a modest to moderate correlation of work engagement and satisfaction with certification coursework received while in service, but little or no correlation between administrative structure and either work engagement or satisfaction with in-service certification coursework. Incidentally to these other findings, this study showed that, though administrative *structure* has little or no correlation, administrators' *leadership behaviors* are correlated to both work engagement and satisfaction with certification coursework received while in service.

## TABLE OF CONTENTS

LIST OF FIGURES .....	vii
LIST OF TABLES .....	ix
ACKNOWLEDGEMENTS .....	x
Chapter 1. PROBLEM AND PURPOSE STATEMENT .....	1
Some of the Causes of the Problem .....	4
A Connection Not Sufficiently Explored .....	5
Defining Work Engagement .....	7
Making the Connection.....	9
An Additional Question .....	10
The Benefits .....	11
The Direct Beneficiaries .....	12
Purpose Statement .....	13
Chapter 2. REVIEW OF RELATED LITERATURE .....	16
Effective Teaching is the Single Greatest Influence on Student Achievement that is Under the Control of the School .....	16
Investment in Teachers' Professional Development .....	20
Professional Development is Often Not Satisfying to Teachers .....	21
Factors that Affect Teacher Satisfaction with Professional Development .....	24
Teacher Evaluation Systems.....	24
Professional Development Design .....	26
Job Resources in the Work Context .....	29
Intrinsic Personal Resources.....	30
The Possibility of a Relationship Between Teacher Professional Development and Work Engagement .....	33
The Job Demands-Resources Model of Work Engagement.....	35
Work Engagement and Teacher Satisfaction with Professional Development ....	37
Trait Work Engagement of Teachers .....	37
State Work Engagement of Teachers .....	39
Implications for Career and Technical Education .....	41
Conclusion .....	44
Chapter 3. RESEARCH METHODOLOGY .....	46
Population and Sample .....	46
Purposive Sampling.....	47
Sample Size .....	50
Administration of the Survey.....	52

Instrument .....	53
Measuring Work Engagement .....	53
Measuring Teacher Satisfaction with Professional Development .....	56
Additional Items .....	58
Chapter 4. RESULTS.....	60
Response Rates and Survey Completion .....	61
Background of Participants.....	61
Descriptive Information for Teacher Work Engagement and Satisfaction with Certification Coursework .....	62
Work Engagement and CTE Teacher Satisfaction with Certification Coursework Received While in Service (Q1 and Q2).....	64
School Administrative Structure as a Factor in Teacher Work Engagement and Satisfaction with Certification Coursework Received While in Service (Q3).....	67
Administrative Structure and Work Engagement. ....	68
Administrative Structure and Certification Coursework Satisfaction....	72
Additional Results .....	74
The Effects of Time and Experience on Work Engagement .....	74
The Effects of When or How Certification Was Received .....	75
Effect on work engagement.....	75
Effect on Teacher Satisfaction with Certification Coursework.....	76
What motivates teachers? .....	77
Summary.....	81
Chapter 5. DISCUSSION AND RECOMMENDATIONS .....	83
The Significance of the Insignificant.....	84
What Administrators Can Do .....	86
What Teachers Can Do.....	88
Limitations .....	88
Recommendations for Further Research .....	90
The Relative Weights of Job Resources and Personal Resources .....	90
The Effects of Time on Teacher Satisfaction with Certification Coursework .....	90
References.....	91
Appendix A. SURVEY INSTRUMENT .....	103
Appendix B. EXPERT EVALUATION OF ITEMS 14–18 OF THE RESEARCH INSTRUMENT.....	105
Appendix C. GRAPHIC ANALYSIS OF ITEM 19 OF THE RESEARCH INSTRUMENT.....	108

Response by Influencers of a Sense of Invigoration and Inspiration in One's Work.....	108
Responses by Degrees of Agreement to Statements Regarding Levels of Teachers' Sense of Invigoration and Inspiration in Their Work.....	111

## LIST OF FIGURES

Figure 1. Job resources and personal resources as antecedents to teacher satisfaction with professional development .....	6
Figure 2. Job resources and personal resources as antecedents to work engagement.....	7
Figure 3. Job resources and personal resources as antecedents to both work engagement and teacher satisfaction with professional development .....	9
Figure 4. Job resources and personal resources as antecedent to work engagement which correlates to teacher satisfaction with professional development .....	10
Figure 5. The thematic flow of the review of literature .....	17
Figure 6. An illustration of the JD-R model of work engagement .....	36
Figure 7. Percentages of the categories of schools from which the teachers responded	51
Figure 8. Illustration of the six relationships measured in the bivariate analysis .....	60
Figure 9. Comparison of the distribution of responses to work engagement and satisfaction with certification coursework items .....	64
Figure 10. A comparison of means of work engagement scores across the various school structures of the respondents .....	69
Figure 11. A comparison of teacher responses to the survey item assessing the degree to which they agree with a statement regarding their supervisors' contribution to their sense of being inspired and invigorated at work as compared to their responses on the work engagement items of the survey .....	71
Figure 12. A scatterplot and least squares line to illustrate the teachers' assessment of their supervisors' contribution to their sense of inspiration and invigoration at work as compared to their satisfaction with the certification coursework they receive while in service .....	73
Figure 13. A graphic representation of the variation in teachers' mean work engagement scores compared by number of years in service .....	75
Figure 14. A comparison of teachers' work engagement scores categorized by when they received/are receiving their certification coursework .....	76

Figure 15. A comparison of scores regarding teachers' satisfaction with certification coursework categorized by when it was received .....	77
Figure 16. A comparison of the frequency of responses to questions regarding degrees of agreement as to how positively four possible influences affect teachers' sense of invigoration and inspiration at work .....	80
Figure 17. Illustration of the six relationships measured in the bivariate analysis with correlations .....	82
Figure 18. The possible indirect correlation of administrators' leadership behaviors to satisfaction with certification coursework received while in service .....	85
Figure C1. The compared means of the measures of the degree to which teachers report that they are inspired and invigorated in their work by their supervisor, peers, students, and school atmosphere .....	110
Figure C2. A comparison of the percentages of responses by influencer .....	111
Figure C3. A comparison of teachers' response levels for each influencer distinguished by levels of agreement .....	112



## LIST OF TABLES

Table 1.	Supporting Research References for Common Conclusions Regarding What Contributes to Successful Teacher Development .....	31
Table 2.	Number and Characteristics of Schools from Which the Sample of Teachers was Taken .....	49
Table 3.	Number of Teachers in Each School in the Sample .....	51
Table 4.	Descriptive Statistics Teachers' Responses to Work Engagement and Coursework Certification Satisfaction Items.....	63
Table 5.	Descriptive Statistics for Only Those Teachers Who Have Completed or are Currently Completing Certification Coursework While in Service .....	65
Table 6.	The Correlation of Work Engagement and the Work Engagement Subscales with Teachers' Satisfaction with Certification Coursework Received While in Service .....	66
Table 7.	Mean Work Engagement Scores of Respondents from Schools of Varied Administrative Structures .....	68
Table 8.	A Correlation of Work Engagement Scores of the Respondents Compared by School Structure .....	70
Table 9.	Mean Scores for Teachers' Satisfaction with Certification Coursework Received While in Service Compared Across Administrative Structures.....	73
Table 10.	Frequency of Responses to the Question of How Many Years a Teacher has been in Service .....	74
Table 11.	A Comparison of Four Possible Influences on Teachers' Sense of Invigoration and Inspiration in Their Work .....	78
Table 12.	Pearson Correlation of the Responses of Teachers Regarding Possible Influencers on Their Sense of Invigoration and Inspiration in Their Work ....	79

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With regard to copyrighted material, permission to use the JD-R Model diagram on page 36 is granted by the publisher, Taylor & Francis Group. The teacher satisfaction questionnaire is used by the permission of the authors. And, finally, permission to use the Utrecht Work Engagement Scale (UWES-9) is granted in Schaufeli and Bakker (2003) and at <http://www.wilmarschaufeli.nl/downloads/test-manuals>.

Beyond the academic support I have had, I need to express my gratitude that I was born into a family that values the acquisition of knowledge. My father, Ronald Park, Sr, “graduated” from seventh grade and had no more post-secondary education than was

afforded to him by working in a saw mill, serving in the Marine Corps, and working as an automotive mechanic. My mother, Phyllis Park, received a post-secondary “education” that consisted primarily of raising children and eventually working in a sewing factory and in the hospitality industry in housekeeping. Yet, both of my parents read regularly and thought broadly, and encouraged their four boys to learn, investigate, explore, and experiment, and to do their best to wisely apply the knowledge that life allows them to harvest from both experience and education. They believed in education and urged their children to get all of it that was appropriate to each one of us individually. I believe in CTE, in large part, because my parents believed in it. “It’s good, because you learn by doing,” my father used to say, and so I happily attend “vo-tech” during high school. My father was not able to be a part of my graduate education other than, during the week before he died, specifically encouraging me to get my master’s degree. My mother, on the other hand, has never stopped asking me about what I am studying, what I am learning, what are the implications, how are correlations calculated, how are these correlations interpreted and what do they demonstrate, and so much more. She has been interested in learning theories, instructional methodologies, department of education policies, school funding, school administration, the neurology of learning, and the list goes on. Her interest in all my lines of inquiry has enabled me to verbally process and organize my learning. I am blessed to have been born to parents who were and are remarkable in so many ways.

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MJ. “Hi,” she said, “My name is Mary Jane, but I go by ‘MJ’.” “Well... hello... MJ.”

We have accompanied and supported each other on this whole journey. Knowing her has changed *everything*. Thank you, MJ, for *everything*.

## **Chapter 1**

### **Problem and Purpose Statement**

In 2006, I became a career and technical education (CTE) instructor in Pennsylvania. Like most of my colleagues in the state, I came to the classroom from industry rather than from a university's teacher preparation program. In order to become certified, I needed to attend classes with other new, secondary CTE instructors. For us, teacher preparation consisted entirely of in-service student teaching and coursework. In the process, I met dozens of other CTE teachers from other schools, conversed with them during breaks, connected with them via email, and listened to their comments in classes. During that time I heard a number of them speak of their discouragement with all varieties of professional development. This included the classes we were taking together as well as the efforts in which they were involved at the schools where they worked. This surprised me, because I enjoyed my classes and my school's professional development events.

I also noted that, if there were several teachers in one class who were dissatisfied with their professional development, often they came from the same school. We were all taking the same classes, yet teachers from particular schools seemed to be consistently dissatisfied. I began to wonder what was different in the work environment at their school that almost predictably resulted in their distaste for their teacher certification courses. The conversations with my colleagues as to why they were dissatisfied with their professional development created my interest in the study that follows.

Each year, policy-makers at the federal, state, and local levels allocate a great deal of money for professional development (also known as in-service training) for teachers specifically in the areas of instructional strategies and classroom management (Miles, Odden, Fermanich, & Archibald, 2004; Fermanich, 2002). The exact amounts are difficult to determine at the local level due to the variations in the ways in which school districts calculate the actual costs of professional development (Odden, Archibald, Fermanich, & Gallagher, 2002). Estimates place spending between 1% and 6% of district spending not including state and federal support (Hill, 2009). With regard to federal spending, The Hechinger Report of the Columbia University Teachers College reports that the “federal government gives local districts more than \$1 billion annually for training programs” (Fertig & Garland, 2012). New York City schools spent close to \$100 million last year [2011] just on private consultants” (Fertig & Garland, 2012).

In spite of this investment of money, as well as time and energy, much of what teachers learn through professional development efforts is not transferred to their actual classroom practice, in some cases, in spite of self-reports to the contrary (Ebert-May et al., 2011). For example, in a national survey of 5,728 math and science teachers, less than 25% on average indicated that in-service training over the previous three years had any effect on their classroom practice (Hudson, McMahon, & Overstreet, 2002). Most instructors indicated that it either had no effect or that the only effect was to reinforce what they were already doing (Hudson et al., 2002; Hill, 2009). What is the cause of this problematic gap between costly professional development and classroom implementation?

This gap may be particularly problematic for Pennsylvania CTE instructors who often arrive in their teaching positions directly from industry with strong technical knowledge but little to no pedagogical training. This is due in part to the fact that Pennsylvania CTE instructors are not required to possess a college degree or certification before employment; however, in order to enter the educational profession they are required to have significant wage-earning industry experience in their program area (Pennsylvania Department of Education, n.d.b; U.S. Department of Labor, 2014). This means that most Pennsylvania CTE instructors receive the bulk of their teacher training in the form coursework that is received while they are in service over a period of six to nine years as opposed to traditional pre-service training in a university (Pennsylvania Department of Education, n.d.a). If these teachers are dissatisfied with in-service professional development, it may sabotage the bulk of their professional preparation.

Note that, for the purpose of this study, the literature regarding in-service professional development is assumed to have a bearing on the topic of CTE teacher preparation in Pennsylvania. This is because CTE teacher preparation typically takes place *while* the teacher is in service during the first six to nine years. Thus, this study is focused on *in-service* teacher certification training as opposed to *pre-service* training. Also, and very importantly to this study, because in-service teacher training for CTE teachers is so similar to in-service professional development, it is assumed that research results related to teachers' professional development has a bearing on CTE teacher training.

### **Some of the Causes of the Problem**

A number of impediments to teachers' satisfaction with and practical application of professional development have been investigated and reported in the literature (Nir & Bogler, 2008; Smylie, 1989; Wilson & Berne, 1999). Some of these impediments are inherent in the content and/or delivery of the training (Nir & Bogler, 2008; Smyle, 1989). For example, training content that is too theoretical or is not related to teachers' present work is less effective (Darling-Hammond & McLaughlin, 1995; Darling-Hammond et al, 2009; Garet et al, 2001; Hargreaves, 1995; Little, 1993; Nir & Bogler, 2008). Professional development is also less effective if it is of short duration with a lack of sustained, ongoing support and application (Barak & Waks 1997; Darling-Hammond & McLaughlin, 1995; Darling-Hammond et al, 2009; Garet et al, 2001; Hargreaves, 1995; Little, 1993).

On the other hand, the literature also indicated that some of the circumstances that either help or hinder teachers' efforts to transfer their training to the classroom are independent of the training content or delivery. That is, even if the training itself is engaging and useful, it may not be applied to practice due to influences that exist in the workplace outside of the training effort (Barak & Waks, 1997; Garet, Porter, Desimone, Birman, & Yoon, 2001; Nir & Bogler, 2008). Nir and Bogler (2008) assert that their study of teacher satisfaction with professional development "demonstrate[d] that satisfaction is influenced by the circumstances in which the instructional processes take place" (p. 384) and not only by the content and/or delivery of the professional development itself.



Many of these influences from the workplace that exist independently of in-service training efforts are work context features such as supervisory support and coaching, teacher autonomy, job fit, management quality, positive environment regarding supervisor and peer affirmation, and a sense of belonging, and they have a strong influence on whether or not training is appreciated by teachers and applied in their classroom practice (Barak & Waks 1997; Corcoran, 1995; Darling-Hammond & McLaughlin, 1995; Garet et al, 2001; Guskey, 1988; Hargreaves, 1995; Nir & Bogler, 2008).

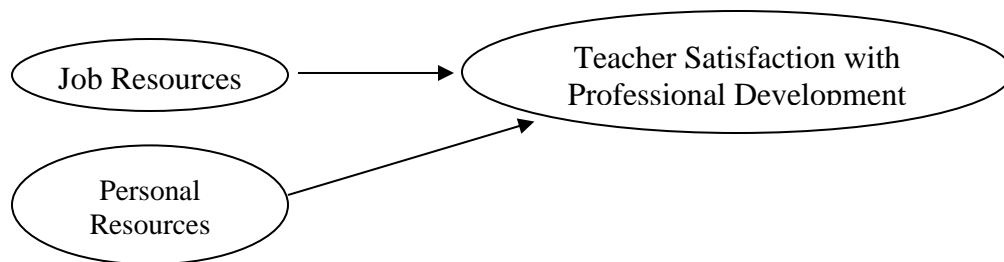
In summary, the influences that either impede or enhance teacher satisfaction with in-service training may be inherent in the professional development itself, or may be facets of the teachers' work environment. While there is a large body of literature dealing with the content and delivery of effective professional development for teachers, less research is dedicated to workplace or personal factors that may either increase or decrease teacher satisfaction with in-service training.

### **A Connection Not Sufficiently Explored**

The influences identified above (supervisory support and coaching, teacher autonomy, job fit, management quality, positive environment regarding supervisor and peer affirmation, and a sense of belonging) have been shown to be components of an overall set of influences on teacher satisfaction with or transferal of professional development. These influences are known as job resources.

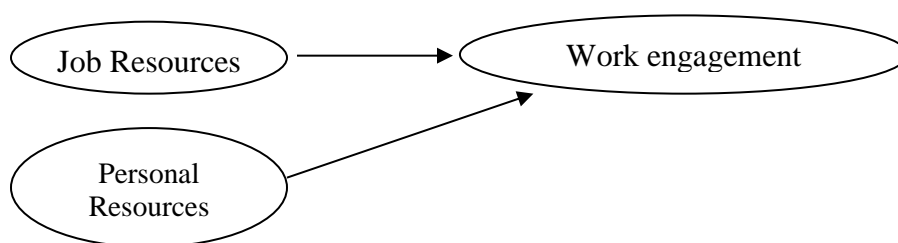
Job resources are “physical, psychological, social, or organizational aspects of the job that may do any of the following: (a) be functional in achieving work goals; (b) reduce job demands and the associated physiological and psychological costs; (c) stimulate personal growth and development.” (Demerouti, Bakker, Nachreiner & Schaufeli, 2001)

Personal resources are also related to teacher satisfaction with professional development (Guskey, 1998). Such personal characteristics as self-efficacy, self-concept, and affect influence the success of professional development for teachers (Guskey, 1998) (Figure 1).



*Figure 1.* Job resources and personal resources as antecedents to teacher satisfaction with professional development.

Not only are these job resources and personal resources antecedents to teacher satisfaction with professional development, there is abundant, recent literature on the connection between job resources and personal resources to work engagement in general (Bakker & Demerouti, 2007; Hakanen, Bakker, & Schaufeli, 2006; Mauno, Kinnunen, & Ruokolainen, 2007) (Figure 2).



*Figure 2.* Job resources and personal resources as antecedents to teacher satisfaction with professional development.

### **Defining Work Engagement**

The conceptualization of work engagement as a construct, which can be identified and quantified independently of other work-related attitudes, is widely though not universally accepted. Where it is accepted as a discrete construct, it is not always defined or described in the same ways. Macey and Schneider (2008) state that “[n]umerous definitions of engagement can be derived from the practice- and research- driven literatures. Additional definitions can be attributed to folk theory: the common intuitive sense that people, and particularly leaders within organizations, have about work motivation” (p. 4). Literature ranging from popular management articles to scholarly research has referred to work engagement concepts by several different names (Macey & Schneider, 2008). However, there is agreement to the degree that most scholarship recognizes that work engagement possesses an energy component and an identification component being “characterized by a high level of energy and strong identification with one’s work” (Bakker, Schaufeli, Leiter, & Taris, 2008, p. 189). It is not the purpose of

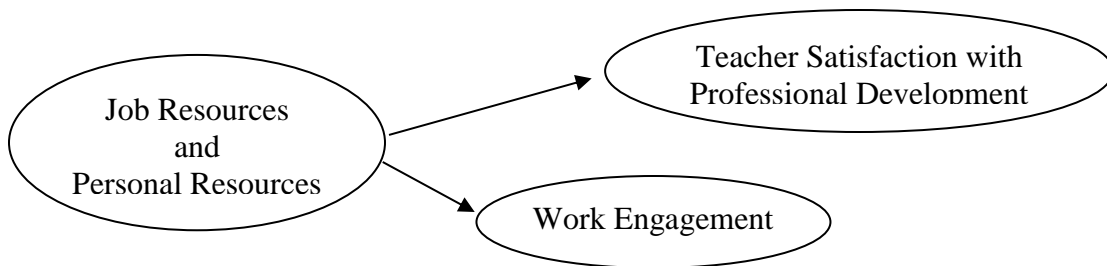
the present study to synthesize various definitions of work engagement nor to create one. It is only necessary to choose a definition and describe it.

This study used Schaufeli and Bakker's (2010) definition of work engagement since it is the most widely used and it corresponds to a measurement instrument that has been repeatedly validated and is the most often employed (Bakker et al., 2008; Breevaart, Bakker, Demerouti, & Hetland, 2012). According to this approach "engagement is defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002, p. 74). Schaufeli and Bakker (2010) further define these three components of work engagement as follows:

Vigour is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties. Dedication refers to being strongly involved in one's work, and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption is characterized by being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work. (p. 13)

### Making the Connection

Research has demonstrated, on the one hand, that personal and job resources are antecedents to work engagement (Bakker & Demerouti, 2007; Hakanen, Bakker, & Schaufeli, 2006; Mauno, Kinnunen, & Ruokolainen, 2007). On the other hand, additional research suggests that these same personal resources and job resources contribute to teacher satisfaction with professional development (Barak & Waks 1997; Corcoran, 1995; Darling-Hammond & McLaughlin, 1995; Darling-Hammond et al, 2009; Delvaux et al. 2013; Garet et al, 2001; Ghitulescu, 2013; Guskey, 1988; Hargreaves, 1995; Nir & Bogler, 2008) (Figure 3).

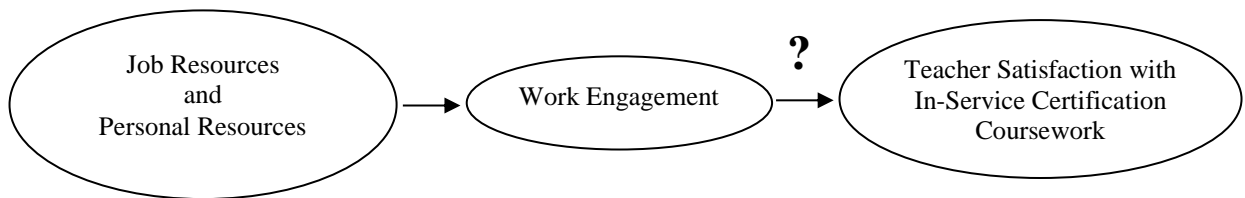


*Figure 3.* Job resources and personal resources related to both work engagement and teacher satisfaction with professional development.

This study explored an unexplored connection between work engagement and Pennsylvania CTE teachers' satisfaction with a specific kind of professional development: teacher certification coursework received while in service. In other words, instead of measuring a correlation between selected *job* and *personal resources* and teacher satisfaction with professional development, this study examined the relationship between *work engagement* and teacher satisfaction with professional development. One

of the benefits of exploring the connection of work engagement rather than job and personal resources with teacher satisfaction with professional development is that work engagement is readily measured having a single validated instrument as will be shown in the methodology section (Bakker, Demerouti, Euwema, 2005; Hakanen, Perhoniemi, Toppinen-Tanner, 2008).

The literature indicates that job resources, personal resources and work engagement are reciprocally related (Hakanen et al, 2008; Mauno et al, 2007; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). This study explored whether or not work engagement is, in turn, related to CTE teacher satisfaction with in-service certification coursework (Figure 4).



*Figure 4.* Job resources and personal resources as antecedents to work engagement which is related to teacher satisfaction with professional development.

### **An Additional Question**

The literature on work conditions leading to teacher satisfaction with professional development often cited supervisor support as a strong influence (Barak & Waks 1997; Garet et al, 2001; Ghitulescu, 2013; Nir & Bogler, 2008; Delvaux et al. 2013). In addition, research on work engagement also indicated the importance of supervisory

support as a positive job resource (Hakanen, Bakker, & Schaufeli, 2006). Thus, supervisory support has a connection to both work engagement and teacher satisfaction with professional development.

The administrative structure of Pennsylvania schools offering CTE programs varies with regard to the availability of personnel who provide direct, dedicated support to teachers. Some schools employ a principal or some other staff member whose primary function is to provide support of the teachers' professional development and instructional practice. This means that some schools, due to a limitation in staff size, are not able to provide focused, ongoing support of their teachers' professional development.

In addition to the relationship between work engagement and Pennsylvania CTE teacher satisfaction with certification coursework, this study singles out the job resource of supervisory support and seeks to discover if there is a relationship between the availability of that support and the teachers' satisfaction with their teacher training as well as their overall work engagement.

### **The Benefits**

In the 1990's, researchers began to perform wide-scale evaluations of teacher performance based on student scores on standardized tests in order to discover the impact of teacher effectiveness on student achievement (Sanders & Rivers, 1996; Wright, Horn, & Sanders, 1997). Eventually, these studies would confirm what parents, students, and educators have always intuited – that students are more likely to learn from some teachers

than they are from others, and that teacher effectiveness is the single most important contributor to student achievement (Chetty, Friedman, & Rockoff, 2011; Haycock, 1998).

Effective teachers enhance the achievements of their students, and the purpose of professional development and in-service teacher training is to improve the effectiveness of teachers. If it can be demonstrated that there is a positive correlation between work engagement and satisfaction with in-service certification coursework, administrators may be motivated to provide those job resources that have been shown to be conducive to a high level of work engagement (Bakker, & Demerouti, 2007; Hakanen et al, 2006; Mauno et al, 2007). This would increase their teachers' implementation of the skills they acquire in their training courses and in turn enhance student achievement. In addition, teachers who wish to improve their craft may also be motivated to cultivate those personal resources such as self-efficacy and optimism that contribute to work engagement (Xanthopoulou et al., 2009).

### **The Direct Beneficiaries**

Most of the research on primary or secondary education has produced literature focused on traditional educators. This study focused on CTE instructors in Pennsylvania; they are the subjects selected in the methodology. Pennsylvania CTE educators have challenges and benefits related to professional development that are unique to them - in particular, the process mentioned above whereby CTE instructors receive the bulk of their certification coursework in the form of in-service teacher training as opposed to university-based pre-service training. R. Peterson, Education Certification Specialist for



the Pennsylvania Department of Education, Bureau of School Leadership and Teacher Quality explained that "the usual pathway for CTE teachers in Pennsylvania is [to teach] one year on an emergency permit which allows the teacher to register for the occupational competency assessment (OCA) process" pursuant to earning vocational intern certification (personal communication, March 13, 2014) and continuing their teacher training *while employed* as teachers.

This study provided information that was derived from experiences of Pennsylvania CTE instructors and is intended specifically for their benefit and consumption.

### **Purpose Statement**

The purpose of this study was to discover if there is a relationship between work engagement and teacher satisfaction with teacher training (i.e. certification coursework) among CTE teachers in Pennsylvania. The additional question of the relationship between a school's administrative structure and both work engagement and teacher satisfaction with certification training was also investigated. This was accomplished by analyzing teacher responses to a two-part questionnaire. One section of the questionnaire measured work engagement, while another measured teacher satisfaction with certification courses. The correlation of the responses in these sections were then measured to determine if a significant relationship exists between them. CTE instructors from ten schools are surveyed regarding their level of work engagement and their experience of satisfaction with teacher training. All CTE instructors in a given school

were included in the survey regardless of their program area (agriculture, business and marketing, health science, family and consumer science, trade and industry, etc.). In schools in which both CTE and academic instructors are employed, only the CTE instructors are included in the survey.

Purposive sampling was used to determine the schools from which the instructors were surveyed in order to represent instructors from both shared-time career and technical centers (CTCs) and comprehensive technical high schools. Schools with single as well as multiple administrators are also represented. High schools that have CTE programs and comprehensive technical high schools are schools that students attend full-time receiving both their academic instruction and their technical program. Shared-time CTCs are career and technical schools that provide technical programs of study, but do not include all the academic courses that students need in order to graduate; therefore, students' time is typically shared between the high school they attend for academics and the CTC. The survey instrument was sent to the following types of schools:

- One regular high school with CTE programs
- Three comprehensive technical high schools
- Four CTCs with multiple administrators including a principal or other staff person who provides instructional support
- Five shared-time CTCs with only one or two administrators

The research addressed the following questions:

Q1: What, if any, relationship exists between work engagement and teacher satisfaction with in-service certification coursework for CTE teachers in Pennsylvania?

Q2: What, if any, relationship exists between each of the work engagement subscales (vigor, dedication, and absorption) and teacher satisfaction with in-service certification coursework?

Q3: Is the administrative structure of the school related to work engagement and/or teacher satisfaction with in-service certification coursework?

Before proceeding with the data collection and analysis intended to answer these questions, it was necessary to review related literature. The literature review in Chapter 2 provided a fuller understanding of the need for effective teacher training and a more detailed knowledge of the construct of work engagement. This foundation was needed in order to inform the construction of the research instrument (Chapter 3), give greater meaning to the data analysis (Chapter 4), and provide background for the discussion and possible applications of the results (Chapter 5).

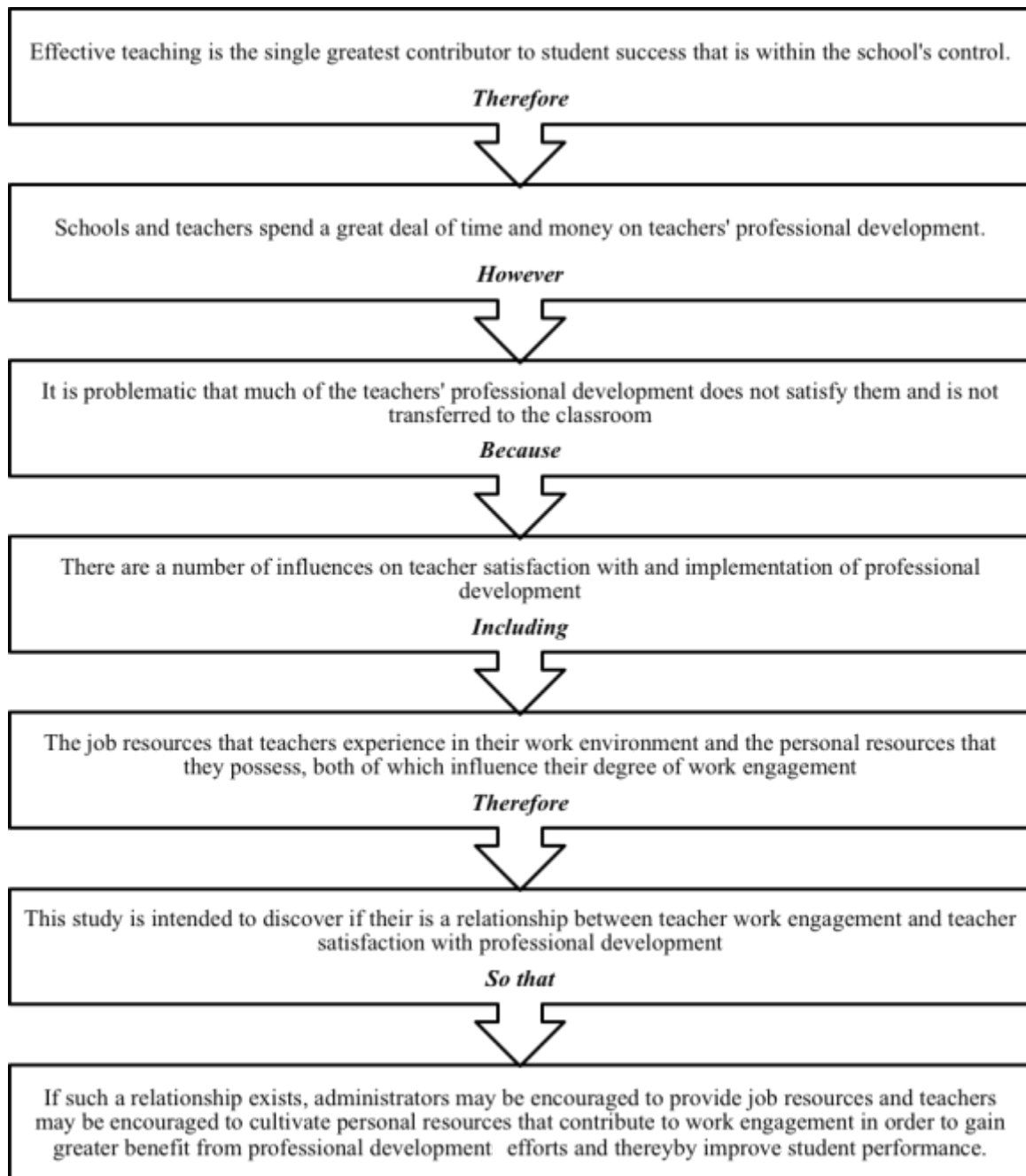
## Chapter 2

### Review of Related Literature

This literature review focuses on the question of teachers' satisfaction or dissatisfaction with professional development and the possibility that levels of work engagement may be related to levels of teacher satisfaction with professional development. The following chapter is intended not only to review research that is directly related to the problem in question, but to give context to the problem and its possible relation to work engagement by following the structure indicated in figure 5. This literature review considers a large number of articles on the issue of in-service professional development, because that topic is closely related to the topic of teacher certification coursework for CTE instructors in Pennsylvania. The topics are related, because Pennsylvania CTE instructors typically receive their teacher "preparation" training (certification coursework) *while* they are employed as teachers and not as pre-service training.

### **Effective Teaching is the Single Greatest Influence on Student Achievement that is Under the Control of the School**

Numerous factors influence student learning and achievement. Many of these are outside of schools' control. But the greatest single influence that school districts can do something about is teacher effectiveness. Teaching skills, professional characteristics,



*Figure 5.* The thematic flow of this review of literature.

and classroom climate are the three main factors within the teacher's control (McBer, 2000) and these factors "significantly influence a pupil's progress" (p. 6). In fact, McBer (2000) states, "Our findings suggest that, taken together, teaching skills, professional

characteristics and classroom climate will predict well over 30% of the variance in pupil progress” (p. 9).

Value-added (VA) assessment is one of the methods used to determine teachers’ contribution to student achievement. VA assessment is the evaluation of teachers based on their students’ scores on standardized tests. High VA teachers have students with high test scores. There is some controversy as to whether or not using VA data is a valid method of evaluating teacher effectiveness, (Economic Policy Institute, 2010; Haertel, 2013) but there is a demonstrable correlation between a teacher’s VA effectiveness and student achievement in a broad range of categories (Chetty et al., 2011).

Using VA data to demonstrate the impact of teacher effectiveness on student achievement, Sanders and Rivers (1996) conducted a study of data collected from the Tennessee Value-Added Assessment System (TVAAS), a database of individual achievement records for “Tennessee’s entire grade 2-8 student population” (p. 1) and found that “Groups of students with comparable abilities and initial achievement levels may have vastly different academic outcomes as a result of the sequence of teachers to which they are assigned” (p. 6). They found that a series of effective or ineffective teachers had a cumulative effect. In addition, they make the sobering assertion that the “residual effects of both very effective and ineffective teachers were measurable two years later, regardless of the effectiveness of teachers in later grades” (Sanders & Rivers, 1996, p. 6). This means that teaching effectiveness (as well as ineffectiveness) has both a cumulative and a residual impact (Sanders & Rivers, 1996) on students’ academic achievement.

In another study based on TVAAS data, Wright, Horn and Sanders (1997) asserted that “this study well documents that the most important factor affecting student learning is the teacher” (p. 63). They found that other factors had an impact, but none as great as the teacher’s effectiveness or ineffectiveness.

Assembling the results of the TVAAS study above as well as others from Texas, Massachusetts, and Alabama, Haycock (1998) vindicates parental instincts by writing that parents have long acted intuitively on the belief that good teaching has a great influence on student achievement and that “Recent research...proves that parents have been right all along. They may not always know which teachers really are the best, but they are absolutely right in believing that their children will learn a lot from one teacher and only a little from another” (p. 3).

Numerous studies have demonstrated that, though other influences are important, instructional quality has the most significant influence on student success (Barber & Mourshed, 2007; Darling Hammond & Rothman, 2011; Hattie, 2012). Though we should consider multiple causality and complexity, many researchers believe that the influence of teacher quality is greater than that of socio-economic class, the curricular selections of the school board and administration, the condition of the school facility, or the availability of modern technology (Hattie, 2009; Marzano, 2007).

The studies above have evaluated the *academic* impact of teacher effectiveness. Other researchers are interested in the power of teacher effectiveness beyond the academic experience and into adulthood. The long-term, positive, *economic* effect of high VA quality teaching was the subject of a research project by the National Bureau of Economic Research (NBER). The research, conducted by three economists, considered

the district data for grades 3-8 for 2.5 million students (Chetty et al., 2011) and linked this data with tax information indicative of parent characteristics as well as the outcomes of the students as adults. They demonstrate that “[b]eing assigned to a higher value-added teacher has a clear, statistically significant impact on earnings” (p. 38) in adulthood, and impacts a wide range of socio-economic factors. They concluded that students who are “assigned to high-VA teachers are more likely to attend college, attend higher-ranked colleges, earn higher salaries, live in higher SES neighborhoods, and save more for retirement” (abstract). Interestingly, they also noted, by using tax data indicating when a child is first claimed as a dependent, that students with higher VA teachers are less likely to become teenage parents. Further, “[t]hese correlations are significantly larger for populations that have a higher risk of teenage birth, such as minorities and low-income students” (p. 41). That correlation indicates that excellent teachers are most effective for students most in need of them.

The benefit of effective teaching for all students and particularly to those typically considered “at risk,” justifies a high level of investment in training and professional development for teachers. Thus, it is important to investigate those factors that may have an influence on the success of teacher training and professional development such as work engagement as I have done in this study.

### **Investment in Teachers’ Professional Development**

There are “barriers to obtaining complete, accurate, and comparable information about spending for professional development among schools” (Fermanich, 2002, p. 28).



A review of school spending policies shows that there is a wide variation in the local allocations of funds for teacher professional development. In a national study of US schools, Killeen, Monk, and Plecki (2002) estimated that, in the 1990s, schools allocated approximately three percent of their total general budgets for teacher professional development. In 2004, Miles, Odden, Fermanich, and Archibald (2004) found that professional spending was “from about 1 percent of operating budgets to more than 8 percent” (p. 2).

These figures do not include state and federal grants (Hill, 2009). As shown above, the federal government provides over \$1 billion annually for professional development programs.

The importance of teacher effectiveness to student success and the economy impels schools and policy makers to commit to this high level of investment in professional development.

### **Professional Development is Often Not Satisfying to Teachers**

In spite of the fact that we recognize the importance of teachers’ training and professional development in order to enhance student achievement and we demonstrate that recognition by significant monetary investments, much of that training is not transferred to actual practice. In some cases, it is not transferred, because the content or the delivery method is not satisfying to teachers. For example, Smylie (1989), through a national survey of teachers, discovered that in-service workshops provided by the school district were perceived as among the least effective means of learning how to teach.

Wilson and Berne (1999) describe what teacher in-service training ought not to be by referring to teacher lore, which suggests that traditional in-service workshops or programs “consist of outside experts with little knowledge of local conditions who present irrelevant, sometimes amusing, often boring prepackaged information... [and such teacher lore] goes on to argue that these experiences are irrelevant and teach teachers little (or at least little of worth)” (p. 174). It is difficult enough to transfer training to practice when the training is done well; how much more difficult when it is provided in a way that teachers find discouraging and dissatisfying. Darling-Hammond, Wei, Andree, Richardson, and Orphanos (2009) tell us that “American teachers say that much of the professional development available to them is not useful” (p. 5).

On the other hand, even the best training can be difficult to transfer. In a study of teachers’ application of concepts learned from professional consultants, Riley-Tillman and Eckert (2001) showed that it is difficult for teachers to generalize specific techniques learned during consultation sessions. The professional development in that study involved training teachers to deal with the specific issues of particular problem students. The authors discovered that teachers often do not generalize the beneficial approaches intended for those difficult students to non-target students who may also benefit from the newly learned techniques. After the initial implementation showed very little (or no) generalization to non-target students, the researchers introduced a generalization prompt. The prompt consisted of a brief session during which the consultant asked the consultees, “‘Have you ever thought about trying this intervention with any other students in your classroom?’ Each teacher indicated that there were other students in the classroom he or she thought would benefit from the intervention” (p. 226). Yet, generalization to those

non-target students was only slightly increased by this prompt. The training was not successfully transferred to overall classroom practice beyond the specific, time-limited, subject-focused intervention.

Casner-Lotto, Rosenblum, and Wright (2009) studied success rates of professional development and workplace readiness programs. They asked those who offered workforce readiness programs in various industries (ex. financial services, manufacturing, education/government/nonprofit, etc.) to rate how well those programs developed workers by moving them from deficient to adequate, or from adequate to excellent levels of skill or expertise. “Less than a fifth of respondents (17.4 percent) from the education/government/nonprofit sectors rate their programs ‘successful’ in raising skill levels from deficiency to adequacy” (p. 8). This is not a specific measure of the failure of teacher professional development, because the teacher ratings have not been disaggregated from the government and nonprofit scores; however, it does indicate that professional development training does not always translate into expert practice.

The success of professional development workshops is evaluated primarily by what are known as “smile sheets” and self-reported personal evaluations about the transfer of learning to the classroom (Ebert-May et al., 2011). The problem is that what the teachers say they do after training is not always what they actually do. Ebert-May et al. (2011), by observing actual classroom practice, documented that the teachers in their study over-reported their success in actually implementing new skills learned in professional development. They provide two examples: 1) The teachers stated that they had implemented active-learning teaching, but “direct observations indicated that the implementation of learner-centered teaching did not occur” (p. 556). 2) “The self-

reported data ... presented a very different picture of faculty teaching from that described by the observational data” (p. 557).

The problem of transfer of training is, of course, not limited to teacher training. Presumably it exists in every industry and discipline to one degree or another. Cromwell & Kolb (2004) refer to the research of Newstrom (1986) who

“reported results from a survey of eighty-four human resource development (HRD) professionals who believed that only 40 percent of the program content of a management development program was transferred to the work environment immediately after the program ended, about 25 percent was still being applied six months later, and a mere 15 percent was being used at the end of one year. (p. 450)

### **Factors that Affect Teacher Satisfaction with Professional Development**

What makes teacher professional development more or less likely to be satisfying to teacher's and thus transferred to classroom practice?

### **Teacher Evaluation Systems**

A study conducted to observe the effects of a new teacher evaluation system in Flanders (Belgium) observed its effect on 1,983 teachers in 65 schools (Delvaux et al., 2013). The evaluation system positively affected the professional development of teachers only under certain conditions. Its greatest impact was on instructors who had

five or fewer years of experience. Apparently, they were in the early stage of discovery characterized by a steeper learning curve and recognized their greater need for professional development (Delvaux et al., 2013). For both inexperienced and veteran teachers, the perceived usefulness of the evaluator's feedback had a positive influence on their applied professional development ( $\beta = .373$  in the multiple regression analysis). "How useful teachers find the feedback which they received during their performance or evaluation interviews is crucial to their professional development" (Delvaux et al., 2013, pp. 8-9).

This study also evaluated the effects of leadership characteristics on professional development in the implementation of the new teacher evaluation system. The researchers focused on three leadership characteristics: 1) transformational leadership involving motivation and vision sharing, 2) instructional leadership directly related to educational expertise, and 3) the attitude of the principal toward the evaluation system. The authors found that transformational leadership (which may have other important functions not to be discounted) had no statistically significant positive influence on teachers' professional development. On the other hand, both instructional leadership and the principal's positive attitude toward the evaluation system had a significant positive influence ( $\beta = .100$  and  $.177$  respectively).

One other interesting observation in this study was related to the balanced formative and summative aspects of the evaluation system (Delvaux et al., 2013, p. 2). Teacher evaluations may have formative purposes that evaluate the present practice of a teacher with a view to continued improvement. These assessments may also have the summative purposes of "holding teachers accountable for their performance" (Delvaux et

al., 2013, p. 1). This study found that, contrary to the conclusions of earlier research, the summative purposes had a “small but significant positive impact on the perceived professional development” (Delvaux et al., 2013, p. 8) ( $\beta = .085$ ). That is, “if teachers find that the evaluation system has more summative purposes, they find that the system has a greater effect on their professional development” (Delvaux et al., 2013, p. 8). Conclusions drawn by previous researchers cited by the authors indicated that a formative purpose (professional development) achieved the more formative goal of encouraging teacher training and applied learning. Intuitively, this seems like a logical cause and effect connection. On the other hand, summative purposes are associated with “accountability and judgment” and “are often related to possible consequences and a fear of sanctions... Therefore, it maybe [sic] that teachers feel more pressure to undertake professional development” (Delvaux et al., 2013, p. 8).

### **Professional Development Design**

The Eisenhower Professional Development Program (EPDP) is a federal funding source for a wide range of professional development activities for teachers primarily in math and science. EPDP-supported activities include “workshops and conferences, study groups, professional networks and collaboratives, task force work, and peer coaching” (Garet et al., 2001, p. 919). The funding process generally functions in conjunction with other funding streams (other federal programs, state programs, and district-level investments) to support professional development initiatives. Garet, Porter, Desimone, Birman, and Yoon (2001) studied the effects of these activities (referred to commonly as

“Eisenhower-assisted” activities) on teacher outcomes by using data from a Teacher Activity Survey (TAS), a tool designed to assess the effectiveness of the EPDP.

The TAS focused on two sets of features of teacher training: 1) structural features, referring to the design of the activities (the delivery system), and 2) core features, referring to the substance of the professional development activity. Structural features include, (a) the type of activity, (b) the duration of the activity (total contact hours within the activity as well as the span of time over which it occurs), and (c) the “collective participation of groups of teachers from the same school, department, or grade level, as opposed to the participation of individual teachers from many schools” (Garet et al., p. 920). Core features include (a) content focus, which is the degree to which the development activity improves the teachers’ content knowledge, (b) active learning, opportunities to engage in “meaningful analysis of teaching and learning” (Garet et al., p. 920), and (c) coherence, “incorporating experiences that are consistent with teachers’ goals and aligned with state standards and assessments, and by encouraging continuing professional communication among teachers” (Garet et al., p. 920).

Garet et al. (2001) found that professional development programs were more beneficial (having a higher degree of learning transfer) when they were longer in duration than the traditional workshop or conference, school-based and involving collective participation (rather than off-site), focused on content, active (with hands-on work), and “integrated into the daily life of the school (coherence)” (Garet et al., 2001, p. 935).

With regard to the impact of the type of training on transfer, the authors contrast traditional training with reform type training. Traditional training refers to conferences or workshops that take place off-site, are run by external experts, and are attended by

teachers from a number of schools. Reform type training occurs during the regular school day and usually consists of mentoring or coaching. Garet et al (2001) assert that the preferable effect of reform type training over traditional professional development activities is an indirect consequence of other variables. The authors state that

the effect of reform versus traditional professional development activities operates indirectly through the other design features and dimensions of quality identified above. That is, reform activities tend to produce better outcomes primarily because they tend to be of longer duration. Traditional and reform activities of the same duration tend to have the same effects on reported outcomes to improve professional development, it is more important to focus on the duration, collective participation, and the core features (i.e., content, active learning, and coherence) than type. (pp. 934-935)

These conclusions are similar to those of many others (e.g., Barak & Waks 1997; Darling-Hammond & McLaughlin, 1995; Darling-Hammond et al, 2009; Garet et al, 2001) . For example, a recent study by Nir and Bogler (2007) determined that the following factors were antecedent to teacher satisfaction with development activities:

- Increased local control due to direct allocation of funding to the school
- Using the school site as the location for training
- Tailoring the program to local needs
- Allowing teachers to decline to participate
- The professional development instructor gives feedback directly to the teachers



- Teacher's job involvement (the degree to which a person is psychologically identified in their work, and it's importance to a person's total self-image as defined by Lodahl & Kejner, [1965])
- Discerning a good fit between job demands and one's abilities (having a positive attitude toward work)
- Principal support (but not too much principal *control*)

These findings have become commonplace in the literature on teacher satisfaction with and successful transfer of professional development training. Table 1 shows a list of commonly reached conclusions regarding what contributes to success in teacher development programs with accompanying lists of references to supporting research.

### **Job Resources in the Work Context**

The section above was focused on the content and delivery of the training itself as an influence on teacher satisfaction with professional development; however, the studies cited demonstrated that teachers' work environments also influence their satisfaction with in-service training.

Research in areas outside of K-12 education also indicates that work conditions that exist apart from the professional development effort itself affect transfer of training. Cromwell and Kolb (2004) show that employees experiencing high levels of organization support, supervisor support, and peer support in the work environment demonstrate a higher level of training transfer when assessed one-month, six-months, and one year after

the training activity. These ideas correspond with the principal support and collaborative peer support of teachers cited above.

Table 1 shows the concurrence of educational researchers on the subject of work context factors as influences on teacher satisfaction with professional development (marked with an asterisk). As shown in Chapter 1, recent literature identifies these influences as job resources. Job resources are “physical, psychological, social, or organizational aspects of the job that may do any of the following: (a) be functional in achieving work goals; (b) reduce job demands and the associated physiological and psychological costs; (c) stimulate personal growth and development.” (Demerouti et al., 2001)

### **Intrinsic Personal Resources**

In a study of 120 teachers from three separate schools, one urban, one suburban and one rural, Guskey (1988) evaluated the influence of “teacher perceptions known to be shared by highly effective teachers, and teacher attitudes toward the implementation of new instructional practices” (p. 64). Three teacher self-perceptions were compared with three attitudes toward the implementation of professional development. The teacher perceptions were 1) self-efficacy – the perception that they could make a difference even in difficult students’ lives and the sense that the responsibility to do so was primarily their own, 2) self-concept – the self-assessment of the teacher regarding whether or not

Table 1

*Supporting Research References for Common Conclusions Regarding What Contributes to Successful Teacher Development*

Influences on the transfer of in-service training	Supporting Research in Both Education and General Business and Industry
*Supervisory support (supportive, but providing significant latitude to teachers)	Barak & Waks 1997; Garett et al, 2001; Ghitulescu, 2013; Nir & Bogler, 2008; Delvaux et al. 2013
*Teacher autonomy, or the teachers' power to influence the content and delivery of training/local control/teacher choice regarding whether or not to attend, etc	Barak & Waks 1997; Corcoran, 1995; Darling-Hammond & McLaughlin, 1995; Darling-Hammond et al, 2009; Garett et al, 2001; Ghitulescu, 2013; Nir & Bogler, 2008
Sustained/ongoing/longer duration	Barak & Waks 1997; Darling-Hammond & McLaughlin, 1995; Darling-Hammond et al, 2009; Garett et al, 2001; Hargreaves, 1995; Little, 1993; Nir & Bogler, 2008
Relevance of training to present work (contextualized: including focus on teachers' instructional content area, local students' needs, fulfillment of government mandates that the teachers deal with, connection to other aspects of school change, etc.)	Darling-Hammond & McLaughlin, 1995; Darling-Hammond et al, 2009; Garett et al, 2001; Hargreaves, 1995; Little, 1993; Nir & Bogler, 2008
School-based regarding location, content, and control	Barak & Waks 1997; Garett et al, 2001; Hargreaves, 1995; Nir & Bogler, 2008
Use of internal experts or including collaboration and collegiality with other teachers taking advantage of peer support and peer expertise in the training.	Darling-Hammond & McLaughlin, 1995; Darling-Hammond et al, 2009; Garett et al, 2001; Hargreaves, 1995; Little, 1993;
Active learning, hands on	Darling-Hammond & McLaughlin, 1995; Garett et al, 2001; Little, 1993;
*Influences related to work engagement (job fit, job involvement, positive environment with supervisor and peer affirmation, a sense of belonging yet an experience of autonomy, etc.)	Ghitulescu, 2013; Guskey, 1988; Hargreaves, 1995; Nir & Bogler, 2008;
Intrinsic personal resources	Guskey, 1998

\*Indicates factors that influence teacher satisfaction with professional development which can be categorized as job resources.

they were good at their work, 3) affect – generally positive attitudes toward teaching, i.e. whether or not they actually liked teaching. These were correlated to three attitudes toward implementation, 1) congruence – the degree to which the new skill was already a part of the teacher’s practice, 2) cost – the level of difficulty in learning and implementing the new instructional approach, 3) importance – the degree to which teachers considered the new approach to be important to student success.

Correlations within the three perceptual variables were predictable; teachers who scored higher in one area, tended to score higher in the others as well. That is, teachers who believed they could and should make a difference also believed that they were good at their job and had a positive attitude towards teaching. The general conclusion was also predictable; teachers with a positive attitude toward themselves and toward teaching, also had a more positive attitude toward implementing new instructional strategies, elevating their satisfaction with professional development and making the transfer of professional development training more likely. Guskey (1988) writes,

[T]eachers who express a high level of personal efficacy, who like teaching, and who feel confident about their teaching abilities are, indeed, highly effective in the classroom, these teachers also appear to be the most receptive to the implementation of new instructional practices ... Those who might be assumed to be less effective, on the other hand, appear to be the least receptive to such implementation. (p. 67)

Thus, teachers who need professional development and reformation of practices the most are often the least likely to benefit from their administrators’ efforts to help them do so.

## **The Possibility of a Relationship Between Teacher Professional Development and Work Engagement**

As mentioned in Chapter 1, the concept of work engagement has been variously defined (Macey & Schneider, 2008). Shuck (2011) categorizes and defines four emerging perspectives of work engagement.

1. Kahn's needs-satisfying approach, which conceptualizes employee engagement as "an internal state of being affected by forces external to the employee" (Shuck, 2011, p. 309).
2. Maslach et al.'s burnout-antithesis approach defining work engagement as "a persistent positive affective state . . . characterized by high levels of activation and pleasure" (Shuck, 2011, p. 309).
3. Harter et al.'s satisfaction-engagement approach. This approach grew out of the positive psychology movement and is described in one of the "most widely read and cited pieces of literature on employee engagement" (Shuck, 2011, p. 311). The article (Harter, Schmidt & Hayes, 2002) analyzed data held at the Gallup organization on employee work engagement which is defined as an "individual's involvement and satisfaction with as well as enthusiasm for work" (Harter et al., 2002, p. 417).
4. Sak's (2006) multidimensional approach which defines employee engagement as "a distinct and unique construct consisting of cognitive, emotional, and behavioral components . . . associated with individual role performance" (Saks, 2006, p. 602 as quoted in Shuck, 2011, 313).

The working definition of work engagement that I am using for this paper is what Shuck (2011) calls Maslach et al.'s burnout antithesis approach. This approach emerged from research related to job burnout (Schaufeli, Taris, & van Rhenen, 2008). This construct has evolved over time as represented by its time-lapsed definitions as follows

- A “persistent positive affective state . . . characterized by high levels of activation and pleasure” (Maslach et al., 2001, p. 417)
- A “positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption” (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002, p. 74; also Bakker & Bal, 2010; Schaufeli & Bakker, 2010).
- A “positive, fulfilling, affective-motivational state of work-related well-being” (Bakker, Schaufeli, Leiter, & Taris, 2008, p. 187).

These final two definitions are used by the JD-R Model of work engagement (Bakker & Demerouti, 2007; Hakanen & Roodt, 2010). This model illustrates how job resources and personal resources are antecedents to work engagement, as defined, and that work engagement in turn leads to positive personal and organizational outcomes. The UWES-9, one of the measurement instruments used in this study also uses these definitions, measuring not only overall employee work engagement, but the three subscales of vigor, dedication and absorption as well.

The connection between job and personal resources and teacher satisfaction with professional development is clear from the literature cited above. These factors increase a teacher's likelihood to respond to change in a positive way. These dynamics closely resemble the Job Demands-Resources (JD-R) model of work engagement and have inspired the present research.

## **The Job Demands-Resources Model of Work Engagement**

The JD-R model demonstrates how job demands and job resources are connected to work engagement, that “positive, fulfilling, and work-related state of mind that is characterized by vigour, dedication, and absorption” (Schaufeli et al, 2002, p. 74, also Bakker & Bal, 2010; Schaufeli and Bakker, 2010).

The JD-R model defines job demands as “those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs.” (Bakker, & Demerouti, 2007, p. 312). These are not always negative in their effect; however, “they may turn into job stressors when meeting those demands requires high effort from which the employee has not adequately recovered” (Bakker & Demerouti, 2007, p. 312). In the JD-R model, job resources have a mitigating effect on negative influences, which helps workers deal with job demands (Bakker & Demerouti, 2007; Demerouti et al, 2001, Mauno et al, 2007).

Xanthopoulou, Bakker, Demerouti, and Schuafeli (2007), in a study of 714 Dutch employees, expanded the JD-R model by examining how, not only job resources, but also “personal resources operate in relation to the model’s processes” (p. 123). They were able to demonstrate that the personal resources of optimism, self-efficacy, and organization-based self-esteem have a motivating effect on employees and reduce employee exhaustion (Xanthopoulou et al., 2007). They proposed that personal resources play a significant role in the JD-R model since, together with job demands and job resources, “they contribute in explaining variance in exhaustion and work

engagement.” (Xanthopoulou et al., 2007, p. 137) Thus, according to the present state of the JD-R model, “both job resources and personal resources foster work engagement” (Schaufeli & Bakker, 2010, p. 21).

The current state of the JD-R model is illustrated in figure 6. This figure is taken from Hakanen & Roodt (2010, p. 95) and is based on Bakker & Demerouti (2007). It illustrates that job resources and personal resources are antecedent to work engagement and that there is also a reciprocal relationship between the three factors of job resources, personal resources, and work engagement (Xanthopoulou et al., 2009). It further illustrates that work engagement brings about positive outcomes.

The question I ask in this present study is whether or not teacher satisfaction with in-service teacher training might be one of those positive outcomes.

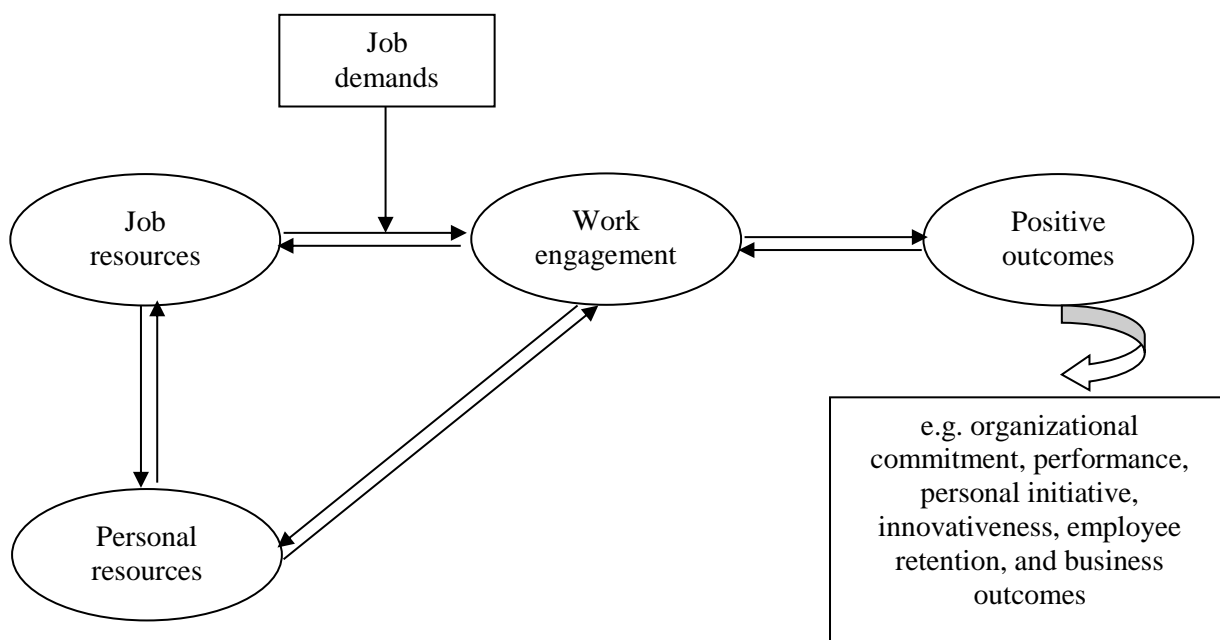


Figure 6. An illustration of the JD-R model of work engagement (Hakanen & Roodt, 2010, p. 95). Used by permission.



## **Work Engagement and Teacher Satisfaction with Professional Development**

Work engagement is generally considered a fairly stable condition within a person with between-person variation occurring from one person to another (Macey & Schneider, 2008; Sonnetag et al., 2010). This is known as trait work engagement (TWE), because it is considered a reasonably predictable trait. However, “it can be assumed that there are short-term (i.e. daily or weekly) fluctuations in the experience of work engagement within one person. Experience sampling studies and diary studies have indeed shown that within individual variations in work engagement do exist” (Bakker & Bal, 2010, p. 190). This fluctuating experience is called state work engagement (SWE) and explains why a given worker may be in a state of greater engagement at work on one day or during one week than another (Sonnetag et al, 2003). The following studies deal first with TWE and then with SWE in teachers.

### **Trait Work Engagement of Teachers**

In a study of 2,038 teachers from the Education Department of Helsinki, Finland (response rate of 52%), Hakanen, Bakker & Schaufeli (2006) demonstrated an important link from job resources to organizational commitment mediated through work engagement. In this study, the researchers, through structural equation modeling, “were able to integrate and study simultaneously in one model many different general as well as profession-specific job demands and resources that are known from previous studies to influence teachers’ well-being” (Hakanen et al., 2006, p. 507).

One of the purposes of the study was to discover which of two models best fit their survey data. Model 1 was that job demands have a relationship with ill health mediated through burnout, and that job resources have a relationship with organizational commitment mediated through work engagement (Hakanen et al., 2006, p. 498-499). The alternative model was that job demands and job resources have a *direct* relationship with ill-health and organizational commitment respectively (Hakanen et al., 2006, p. 507).

Results were first obtained for half of the sample, which was randomly split, and then cross-validated with the results from the other half sample. The results were supportive of the JD–R model of work engagement in that the “alternative model, in which job demands have a direct relationship with ill health and job resources have a direct relationship with organizational commitment, did not fit better to the data” (Hakanen et al., 2006, p. 507) than the model in which burnout and work engagement had mediating effects. They concluded that “these results among teachers replicate and expand previous findings gained using the JD–R model among other occupational groups” (Hakanen et al., 2006, p. 508). Specifically, teachers’ job resources contribute to their work engagement which in turn influences their organizational commitment.

Ghitulescu (2013) conducted a study of special education teachers in a school district that was involved in a change effort aimed at implementing a new district policy intended to improve the mathematics curriculum. “Given the nature of the change, implementation required changes in teacher task behavior, both in terms of actions to adapt teaching practice to new demands and proactively introduce new approaches to teaching using the new curriculum” (Ghitulescu, 2013, p. 208). The change required

professional development on the part of the teachers as well as adaptive and proactive behavior. Ghitulescu (2013) focused the research on the degree to which work context affected the teachers' likelihood to engage in adaptive and proactive behaviors in a climate of organizational change. Applying the JD-R model, Ghitulescu (2013) concluded that "change leaders can encourage adaptivity and proactivity by shaping a work environment that stimulates these behaviors" (p. 231).

Professional development of teachers in the context of organizational change is intended to enable them to adapt to changing demands and proactively implement new learning. Ghitulescu (2013) demonstrates that positive work environment factors (i.e., job resources) facilitate teachers' development to those ends.

### **State Work Engagement of Teachers**

Bakker and Bal (2010) conducted a study of 54 Dutch teachers in which they used weekly questionnaires to determine how job resources influence work engagement and performance on a weekly basis. The researchers chose to include the job resources of "autonomy, social support, performance feedback, supervisory coaching, and learning opportunities", the three subscales of work engagement (vigor, dedication, and absorption), and two in-role and two extra-role performance items (Bakker & Bal, 2010, p. 194-195). Examples of the performance questions were, "'Last week, I fulfilled all the requirements of my job' (in-role performance), and 'Last week I volunteered to do things not formally required by the job' (extra-role performance)" (Bakker & Bal, 2010, p. 195).

Bakker & Bal (2010) found in their SWE-based study that weekly job resources contribute to weekly state work engagement which in turn influences weekly in-role and extra-role performance of teachers. This is similar in its results to the TWE-based study of Hakanen et al. (2006) cited above.

In an interesting connection to my study on the relationship between work engagement and teacher satisfaction with in-service teacher training, it might be noted that Bakker & Bal (2010) made their study among starting teachers. Though their study was not specifically focused on professional development, part of the in-role job performance of starting teachers who are experiencing the early learning curve of a new career, is to apply what is learned in orientation and professional development activities. Therefore, the work engagement factors in that study would have had an effect on the satisfaction with and transfer of the early professional development of those teachers.

With regard to the development of starting teachers, Joerger & Bremer (2001) studied research on teacher induction programs in an effort to improve retention and provide professional development to beginning CTE instructors. They explain that teacher induction programs can be helpful in assuring successful entry into the teaching profession when those programs include the job resources of “(a) ongoing personal support; (b) assessment and feedback on teaching performance and progress... (c) continuing education opportunities that address current needs... and (d) positive socialization into the profession” (Joerger & Bremer, 2001).

### **Implications for Career and Technical Education**

The issue of effective teaching is particularly important in the current climate of CTE. Secondary CTE is “moving from a primary focus on preparing students for entry-level employment to preparing them for continuing education and professional development as well as employment.” (Bottoms, Egelson, Sass, & Uhn, 2013, p. i). In addition, Bottoms, Egelson, Sass and Uhn (2013) state that “high-quality CTE teaching in the 21st century has placed new demands and responsibilities on CTE teachers” (p. 1). CTE teachers are now responsible to integrate grade-level literacy and numeracy for improving student outcomes and must design intellectually challenging projects and realistic problems encountered in the workplace. They must also be able to engage an increasingly diverse population of learners (Bottoms et al., 2013).

In light of these intensifying challenges for CTE teachers, the federal Carl D. Perkins Career and Technical Education Improvement Act (Perkins IV) of 2006 indicates that state plans must show how career and technical educators’ professional development will be provided (U.S. Congress, 2006). Perkins IV specifies that professional development should be that which “promotes the integration of coherent and rigorous academic content standards and career and technical education curricula” (U.S. Congress, 2006, Sec. 122 c, 2, A) and is “high quality, sustained, intensive, and focused on instruction, and increases the academic knowledge and understanding of industry standards, as appropriate, of career and technical teachers” (U.S. Congress, 2006, Sec. 122 c, 2, C). Perkins IV again emphasizes academic as well as career and technical content area knowledge as it states that professional development must also encourage

“applied learning that contributes to the academic and career and technical knowledge of the student” (U.S. Congress, 2006, Sec. 122 c, 2, D). Perkins IV also requires that career and technical educators must be provided with “the knowledge and skills needed to work with and improve instruction for special populations” (U.S. Congress, 2006, Sec. 122 c, 2, E).

Contrast this call from Perkins IV to provide high quality professional development for career and technical educators with the fact that new CTE teachers are typically “not as academically or pedagogically prepared as are candidates for certification in secondary fields” (Cramer, 2004, p.15). Cramer (2004) indicates that the direction of federal policy is that CTE teachers are intended to support and reinforce students’ academic achievement, yet “vocational teachers’ job requirements and teacher preparation programs may not currently emphasize this new direction” (p. 15).

Educators recognize that even teachers who are prepared in a traditional certification program and who have received that essential “academic and pedagogical” training require *additional* professional development in order to be effective when transferring to the CTE classroom and lab (O’Connor, 2012). This further demonstrates the fact that performance as a CTE teacher carries a high degree of challenge and requires quality preparation and ongoing professional development.

O’Connor (2012) explains that the transition of the emphasis in CTE from preparation for employment to preparation for continuing education places a “greater emphasis on academic integrations” (p. 34). This expanded mission of CTE means that teachers transitioning from the academic classroom to CTE must learn to teach both

academic and technical content (O'Connor, 2012) and integrate them into a meaningfully “coherent and rigorous” whole (U.S. Congress, 2006, Sec. 122 c, 2, A).

Concurring with Bottoms et al (2013) and O'Connor (2012), McCaslin & Parks (2002) indicate that much is expected of today's CTE instructor. In contrast to the CTE teacher of the 20<sup>th</sup> century, today's CTE teachers are “faced with a plethora of additional expectations and demands” (McCaslin & Parks, 2002, p. 5). In the past, CTE teachers “have been responsible for preparing individuals to enter into and succeed in the labor market. This relatively straightforward charge entailed equipping students with the essential knowledge and work-related skills to meet the demands of the contemporary workplace” (McCaslin & Parks, 2002, p. 5). Today, CTE teachers are required to produce students who are technologically prepared, academically competent, demonstrating critical thinking and higher order thinking skills, and who can solve problems and work collaboratively (McCaslin & Parks, 2002). These teachers must function in an environment of increasing accountability all the while serving a population of students who are more diverse than their academic counterparts as they tend to be more “educationally and socially challenged” (McCaslin & Parks, 2002, p. 5).

The high degree of professional challenges faced by CTE instructors coupled with the lack of pre-service preparation that most of them experience demonstrates the urgency to understand the influences that either help or hinder their in-service teacher training and preparation for certification. Conscientious administrators who are concerned about student achievement as well as effective spending will want to know what influences in their teachers' work environment may make them more or less apt to be satisfied with and benefit from teacher training efforts.

## Conclusion

Schools and school districts spend a great deal of money to continually train teachers, because they recognize that teachers have a great influence on student achievement. There is a large body of research with considerably overlapping conclusions that establishes that there are several commonly understood elements of successful, effective in-service training. These features of effective training involve keeping the training in the environment of the school, contextualizing the training within the teachers' actual practice, creating opportunities for collaborative work with other teachers within the same school, using internal experts, relating the content to the teachers' instructional content area to increase their subject matter expertise (not only their pedagogical skills), giving the teachers autonomy with regard to the content and structure of professional development initiatives (even whether or not they would choose to attend), and an administration that provides instructional leadership and overall positive support without being autocratic or controlling.

Teachers who experience job resources and possess personal resources have been shown to be more satisfied with and more inclined to implement their in-service training. Recent literature on the JD-R model of work engagement has demonstrated that job resources and personal resources influence positive outcomes through the mediating effect of work engagement. Therefore, it is not surprising that engaged teachers are more likely to be more organizationally committed and participate in positive in-role and extra-role behaviors.



One notes a lack of research regarding the effects of work engagement on teacher performance other than a few articles. One further notes an absence of research on the effects of work engagement specifically on the in-service training of teachers. This study was intended to discover the relationship between work engagement and teacher satisfaction with certification coursework received while in-service. If such a relationship exists, administrators may be encouraged to provide job resources and offer opportunities for teachers to develop personal resources that contribute to work engagement. Teachers may also be encouraged to develop personal resources independent of administrators' initiatives in order to become more engaged at work. In doing so, teachers may gain greater benefit from training efforts and thereby improve student performance.

## **Chapter 3**

### **Research Methodology**

The purpose of this research was to discover whether or not there is a relationship between CTE teachers' level of work engagement and their satisfaction with in-service teacher training. The additional question of the relationship of a school's administrative structure to both work engagement and teacher satisfaction with in-service teacher training was also investigated. The following paragraphs describe the sample, the data-gathering instruments, and the statistical methods used.

### **Population and Sample**

The focus population of this study is Pennsylvania CTE instructors. The Pennsylvania Department of Education Bureau of Career and Technical Education designates three professional personnel development centers (PPDCs) to provide teacher certification preparation programs for CTE teachers (Pennsylvania Department of Education, n.d.b). Each of these has a dedicated region of service. The professional development delivery system in each of the PPDCs varies somewhat. I have reduced the possible differences in teacher satisfaction with teacher training produced by these variations in the PPDCs by surveying teachers in only one of the regions of service. This means that the teachers in the study received or are receiving their certification coursework from the same PPDC. The exceptions would be those eight teachers who

received their certification coursework pursuant to a Pennsylvania State approved *instructional* certification as opposed to a *vocational* certification – the PPDCs deliver coursework pursuant only to *vocational* certifications. Also, it should be borne in mind that a small number of teachers who had completed vocational certifications may have done so in a different region and subsequently moved into the region where the survey took place.

### **Purposive Sampling**

CTE instructors' school environments differ.

- High schools with only one or a few CTE programs – a type of comprehensive high school. Not all students in such schools are CTE students. Those who are CTE students, receive their technical training in the same school in which they take regular academic courses along with non-CTE students.
- Comprehensive technical high schools. All students in such schools are CTE students. CTE instructors in these schools work in the same building as the students' academic instructors.
- Shared-time career and technical centers (CTCs). As implied in the name, these schools share student attendance time with a regional group of academic high schools. Students attend the high school of their district of residence for a specified portion of their time to receive academic instruction. They attend the local CTC for the rest of their time to receive instruction in their CTE program area.

The teachers' experiences differ based on the type of school in which they teach. High schools with in-house CTE programs, comprehensive technical high schools, and large shared-time CTCs employ multiple administrators, while many small CTCs have very minimal administrative staff – often only one administrative director. Supervisory oversight of professional development varies along with the number of administrators available to provide support and/or accountability.

This study employed purposive sampling to include schools in these varying sizes and structures in order to compare their responses. This is connected to Q3 regarding the influence of administrative structures on both work engagement and teacher satisfaction with in-service certification training.

Specifically defined for this study, schools with a small administrative staff are those shared-time CTCs that have only one onsite administrator. This single administrator is tasked with a comprehensive array of duties regarding the daily operation of the school. Because of the number and variety of time demands on this administrator, teacher observation and professional development are only portions of their function and do not receive the bulk of their attention. On the other hand, for this study, schools with a relatively larger staff are those that employ at least one onsite administrator or teacher mentor/coach who spends the majority of his/her time on directly observing and supporting the teachers' instructional process which would include acquisition and application of those skills gained in their certification courses.

This study examined the responses of CTE instructors in four comprehensive schools, because the combined CTE and academic nature of the approach in such schools may produce a different environment. Also, comprehensive schools usually have an

administrative staff that includes at least one person who supervises professional development and/or has a dedicated role in instructional support. One of these schools is a regular high school in which only a part of the student body is classified as CTE. The other three of these schools are comprehensive technical high schools in which all students are CTE students.

Instructors in four shared-time CTCs with a comparatively large administrative staff were also included. Like comprehensive schools, they too were chosen because they have a staff member dedicated to professional development and/or instructional support for at least a majority of their time.

Instructors from five CTCs with a small administrative structure were included in the survey, because their administrator has a more comprehensive leadership role and is not able to provide dedicated direct support of professional development and/or instructional practice. Table 2 shows these distinctions in school structures.

Table 2  
*Number and Characteristics of Schools from Which the Sample of Teachers was Taken*

	Number of each kind of school from which the sample was taken	Designated Staff Member for Professional Development and Instructional Support	Single Administrator with Comprehensive School-wide Duties
High School with CTE Programs	1	X	
Comprehensive Technical High School	3	X	
Large Shared-Time CTC	4	X	
Small Shared-Time CTC	5		X

## Sample Size

All CTE instructors were surveyed in each of these schools. In those schools where some teachers deliver academic instruction, only those who teach in CTE programs are included in the survey.

Tabachnick and Fidell (2013) suggest three formulas (p. 123) for calculating sample size:

- $N \geq 50 + 8m$  “(where  $m$  is the number of IVs) for testing the multiple correlation” (Tabachnick & Fidell, 2013, p. 123)
- $N \geq 104 + m$  “for testing individual predictors” (Tabachnick & Fidell, 2013, p. 123)
- $n \geq 20 + 5m$  “This could be considered a minimum sample size when power estimates are not feasible.” (Tabachnick & Fidell, 2013, p. 123)

For my study, which includes six variables, these formulas would yield sample sizes of 98, 110, and 50 respectively.

Urdan (2010) suggests calculating sample size with the formula  $30 + (10 * \text{each study variable})$  when performing multiple regression analysis. Applying this formula to my six-variable, bi-variate analysis would yield a sample size of 90.

Based on these calculations, the target response rate of this study was between 50 and 110.

Note that there were comparatively fewer of the larger schools and more of the smaller schools in the sample. This scale of sampling was created in order to achieve a balanced representation of each subgroup (Table 3). The resulting response rate achieved

the desired balance (Figure 7). Note that for interpretive purposes, the single regular high school with CTE programs was grouped with the comprehensive technical high schools because of the similarity of their administrative structures and the fact that these schools provide both academic and technical preparation.

Table 3  
*Number of Teachers in Each School in the Sample*

Schools by Type	Number of Teachers
<u>Comprehensive</u>	
A-1	2
A-2	30
A-3	17
A-4	20
<u>Large Shared-Time</u>	
B-1	35
B-2	20
B-3	22
B-4	6
<u>Small Shared-Time</u>	
C-1	12
C-2	12
C-3	9
C-4	9
C-5	12
<b>Total</b>	<b>206</b>

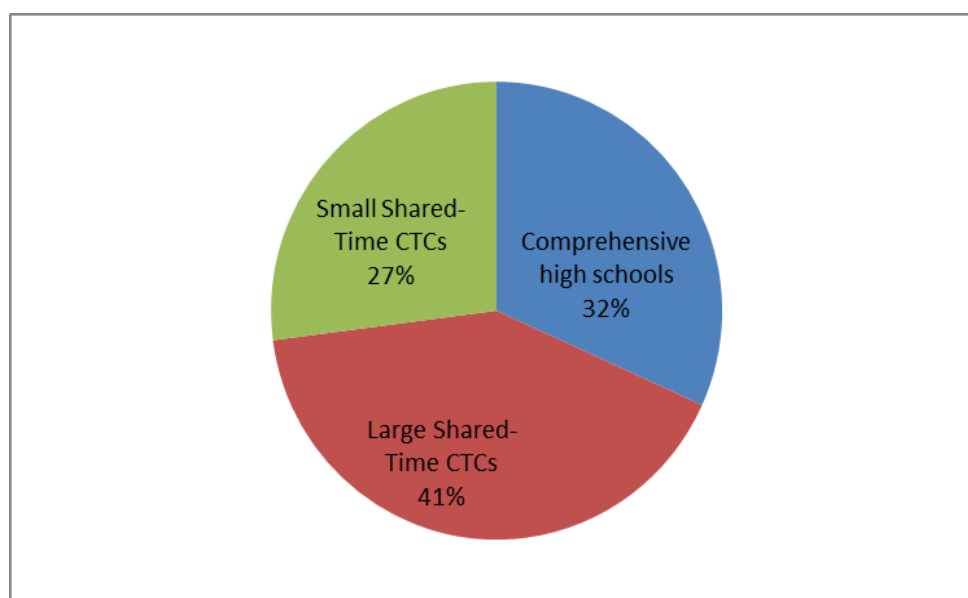


Figure 7. Percentages of the categories of schools from which the teachers responded.

### **Administration of the Survey**

The survey, created with Qualtrics, was administered in two phases in order to increase response rate. In the first phase, the career and technical education directors at each of the schools from which the sample was taken were contacted and asked to distribute the survey link to all CTE instructors in the school.

The directors forwarded the link with a recruitment and consent document to their teachers. It is not likely that receiving the email from their administrative supervisors had the effect of coercing teacher participation. This was mitigated by the fact that the teachers' participation was completely voluntary and that their participation or non-participation could not be traced in any way. Though not coercive, it may have increased participation, because response rates tend to be higher when participants receive surveys from an identifiable source or sponsor (Fowler, 2014).

After one week, a reminder was sent to the administrative directors and, once again, distributed by them to the CTE instructors in their schools. After one more week, I obtained permission to contact the CTE teachers directly to remind and encourage them to participate in the survey.

At the end of the fourth week, it was determined that the sample size was at the lower end of the target range of 50-110 responses; therefore, another phase of data collection was initiated. The second phase involved adding one more school in each of the categories shown in Table 3. Table 3 reflects the final count after the second phase. In this phase, teachers were contacted directly without participation by the administrative



directors. After another week the teachers were contacted again as a reminder to participate. Six weeks of data collection resulted in the collection of 97 responses.

### **Instrument**

The anonymous, self-report instrument used in this study was assembled from two previously created and validated instruments preceded by four questions for categorization and augmented by three, additional, short-answer questions. All questions were answered on Likert-type scales with the exception of the four initial questions (which provide classifying information for the purposive nature of the sample) and the short-answer questions at the end (Appendix A).

### **Measuring Work Engagement**

Once again, the working definition of work engagement for this study was that which corresponds to the JD-R model of work engagement. That is, a “positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption” (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002, p. 74; also Bakker & Bal, 2010; Schaufeli & Bakker, 2010). Using this definition allowed the use of a measurement instrument with a high degree of validation (Schaufeli & Bakker, 2003; Schaufeli et al. 2006), the Utrecht Work Engagement Scale (UWES). Schaufeli and Bakker (2010) demonstrate that the UWES instrument is characterized by factorial validity, factorial

invariance, internal consistency, stability, and discriminant validity. A brief definition of each of these terms follows:

- Factorial validity – The three factors of vigor, dedication, and absorption are “different, but closely related aspects” (Schaufeli and Bakker, 2010, p. 17) of work engagement. Including items related to each of these factors allows the UWES-9 to produce a single score to indicate overall work engagement.
- Factorial invariance – Comparing the approach of including items related to the three factors of work engagement (three-factor approach) cross-nationally indicates that there is factorial invariance among national groups. There is also factorial invariance between occupational groups as demonstrated by the wide use of this instrument among workers in divergent occupations (Schaufeli and Bakker, 2010).
- Internal consistency – Meta-analyses demonstrate very good internal consistencies of the measurements of the three factors of work engagement. The intercorrelations between the items have been demonstrated by an analysis across 33 samples (N = 19,940) from nine different countries. The Cronbach’s  $\alpha$  of “all three scales of the original and short versions of the UWES exceeds .80. Moreover, Cronbach’s  $\alpha$  for the composite score exceeds .90” (Schaufeli and Bakker, 2010, p. 18).
- Stability – The UWES (both the original and short versions) show stability coefficients over a three-year period ranging from .82 to .86 (Schaufeli & Bakker, 2010).

- Discriminant validity – The UWES responses compared with responses for validated instruments for testing related concepts show that work engagement can be discriminated from such other states as burnout, personal initiative, job involvement, organizational commitment, job satisfaction, and workaholism (Schaufeli & Bakker, 2010).

The UWES has evolved through three permutations from twenty-four, to seventeen and finally to nine items – known simply as the UWES-9. Schaufeli, Bakker, & Salanova, (2006) provide a brief history of the instrument explaining that the original 24-item questionnaire was discovered to have seven unsound items and was reduced to the UWES-17 which was demonstrated to have a high degree of validity and reliability. The purpose in shortening the questionnaire to nine items “is basically pragmatic: Researchers strive to include as few items as possible for measuring a particular construct because respondents should not be unnecessarily bothered. Besides, long questionnaires increase the likelihood of attrition” (Schaufeli et al., 2006, pp. 702-703).

Permission to use the Utrecht Work Engagement Scale was granted in Schaufeli and Bakker (2003) who provide the UWES-9 in their manual. They include the following footnote: “The Utrecht Work Engagement Scale is free for use for non-commercial scientific research. Commercial and/or non-scientific use is prohibited, unless previous written permission is granted by the authors” (p. 48).

## Measuring Teacher Satisfaction with Professional Development

Ebert-May et al. (2011) have shown that what teachers say they do with regard to the transfer of their training to classroom practice is not always what they actually do. This is likely due, at least in part, to the well-known social desirability bias in which people report a more positive measure of themselves than that which is accurate. Since the instrument for this study was a self-reporting survey, I chose to measure teacher *satisfaction* with teacher training rather than *transfer* of teacher training coursework. This was intended to reduce data contamination from the social desirability bias. Transfer of training is related to teacher performance and improvement, which could be perceived as an ethical obligation by teachers and may influence teachers to evaluate themselves in a way that is skewed positive. On the other hand, teacher satisfaction is perceived as more a matter of non-ethically related taste and is likely to elicit more accurate answers. The items in the survey that measure teacher satisfaction with professional development allowed the teachers to evaluate the content and delivery of the professional development itself rather than to judge their own behavior.

Measuring teacher satisfaction with teacher training does not directly measure transfer of training, but it may indicate a greater likelihood of transfer. Nir and Bogler (2008) stated that the more teachers are satisfied with professional development initiatives, “the more likely they will acquire new knowledge and skills that will improve their professional conduct and benefit children and the schools they serve” (p. 383).

For this study, teacher satisfaction with teacher certification coursework is defined as teachers’ belief that the coursework which they are required to take is valuable

to them professionally. This satisfaction was in turn considered to indirectly indicate an increased likelihood for teachers to transfer newly acquired knowledge and skills to their teaching practice.

I chose my instrument from Nir and Bogler (2008), because of its brevity and simplicity. It consists of five statements, which are scored with a Likert-type scale. This scale is used by permission of the authors.

For the present study, the statements were altered in order to reflect the nature of CTE teacher certification training in Pennsylvania. Since Pennsylvania CTE instructors typically receive certification courses from a university while they are in service, the words “in my school” were removed from the original statements (13-15 and 17). For example, the first item in this section was, “The professional development process in my school promotes my professional abilities.” In order to refer to CTE certification coursework, the statement was altered to read, “The certification preparation coursework promotes my professional abilities.”

In the applied use of the test by the originators (Nir and Bogler, 2008), it was demonstrated to have a good degree of internal consistency with a Cronbach’s  $\alpha$  of .81.

In order to establish the content validity of the items in this section, a panel of seven experts in CTE and/or statistical methodologies was asked to offer their judgment – three from Penn State University, and four from outside Penn State. These experts, each of whom have published research experience, were asked to evaluate whether or not these statements would provide an effective measure of teachers’ satisfaction with the certification coursework in which they were involved and if they were appropriate for a CTE audience in particular. They were provided with the working definition of teacher

satisfaction used in this study to enable them to make this judgment of content validity.

The body of the letter used to elicit expert input is included in Appendix B along with the names (by permission) of those who responded.

There was general concurrence in the responses of these experts that these statements, scored on a five point Likert-type scale, would provide an accurate measure of CTE teachers' satisfaction with professional development.

### **Additional Items**

Three classification items were added at the beginning of the survey to identify the administrative structure of the responding teacher's school, the teachers' number of years of service and their current level of certification. An explanation was provided to the survey participants to inform them of the terminology used in the item regarding their school's administrative structure.

Three items were added to the end of the instrument. The first item is a five point Likert type scale that measured the degree to which four influencers (supervisors, peers, students, school atmosphere) effect teachers' sense of inspiration and invigoration at work. The second item is qualitative and gives the teachers an opportunity to provide an example of an approach to delivering certification coursework that they have found beneficial and how it may have improved their teaching practice.

The third additional item was also qualitative and asked teachers to provide responses to four questions:

- What contributes most to your desire to go to work?

- What contributes most to your desire to do your best at work?
- What hindrances do you experience in being your best as a teacher?
- What do you dislike most about your work?

These items were not intended to function as a part of this study or to answer the research questions. They were added in order to yield data for future research; however, these items unexpectedly yielded information of interest to the present study. This information is analyzed in the following chapter.

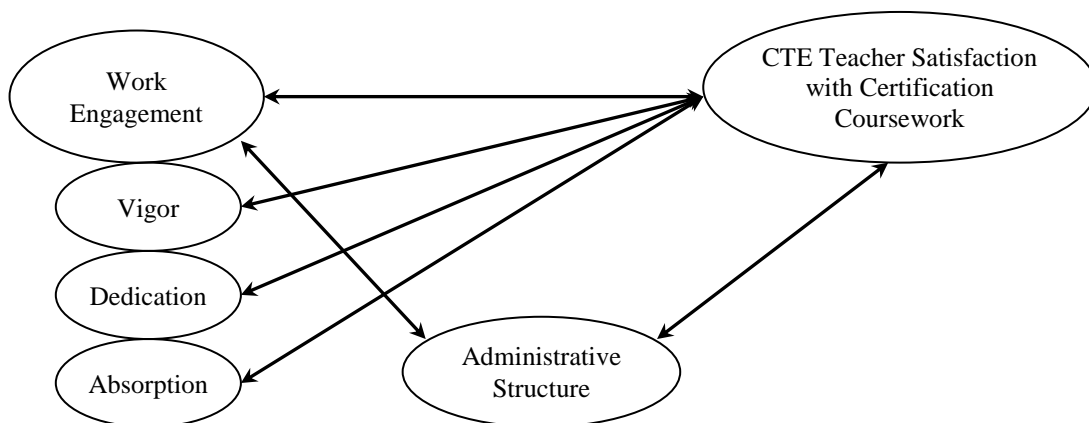
## Chapter 4

### Results

Data were collected via a cross-sectional, self-report survey using Qualtrics and analyzed using SPSS software as well as MS Excel™ and manual calculations.

Examination of the data represented a bivariate analysis of data for six primary variables.

Work engagement and each of its subscales of vigor, dedication, and absorption were correlated with teachers' self-reported satisfaction with certification coursework. In addition, the administrative structure of the schools in which the respondents work was correlated with both teacher overall self-reported work engagement and teacher satisfaction with certification coursework (Figure 8). The data analysis showed how variation in one variable corresponds to variability in a second variable via Pearson correlations.



*Figure 8.* Illustration of the six relationships measured in the bivariate analysis.



This study addressed the following research questions:

Q1: What, if any, relationship exists between work engagement and teacher satisfaction with in-service certification coursework for CTE teachers in Pennsylvania?

Q2: What, if any, relationship exists between each of the work engagement subscales (vigor, dedication, and absorption) and teacher satisfaction with in-service certification coursework?

Q3: Is the administrative structure of the school related to work engagement and/or teacher satisfaction with in-service certification coursework?

### **Response Rates and Survey Completion**

The survey was sent to 206 teachers; 97 responses were returned providing a 47 percent response. Of the 97 responses, 17 were incomplete; however, of the 17 incomplete surveys, six completed most or all of the questions involved in this study, having stopped responding at the point where the additional, qualitative questions began. Thus, I deemed that 86 responses were sufficiently complete to include in the data analysis (41.7% usable responses).

### **Background of Participants**

All of the respondents in this study were CTE instructors, 91% of whom received or were receiving their certification coursework while employed as teachers. Because

they had received or were receiving this training while serving in the teaching profession, it was possible that work conditions and attitudes may have affected their self-reported satisfaction with work-related certification coursework.

For the analysis involving the correlation between administrative structure and work engagement, all teachers' responses were included in the analysis regardless of whether they had or had not finished their coursework before entering the teaching profession. However, for the analyses that involved the correlation of either administrative structure or work engagement with satisfaction with certification coursework, those teachers whose coursework was completed before entering the teaching profession were excluded from that analysis. This exclusion was necessary to yield results that were consistent with the research questions. Thus the sample size ( $n$ ) varies for different aspects of the analysis and is noted appropriately throughout the analysis.

### **Descriptive Information for Teacher Work Engagement and Satisfaction with Certification Coursework**

Table 4 presents the descriptive statistics for the teachers' responses to the work engagement items and the items related to satisfaction with certification coursework. It should be noted that the work engagement responses were scored on a 7-point Likert-type response scale, while the coursework satisfaction items were scored on a 5-point Likert-type scale. This difference in response scale anchor points explains what appears to be a much lower mean for the coursework satisfaction scale. In fact, it is lower, but not by as much as might first appear from Table 4. A clearer comparison of these means is seen in

Figure 9 which illustrates a comparison of the distribution of responses to the work engagement and the satisfaction with certification coursework items in the survey instrument.

Among the subscales of work engagement, vigor had the lowest mean score and dedication had the highest mean score; however, due to the internal consistency of the work engagement measurement instrument (Cronbach's  $\alpha = 0.935$ ), these values do not differ substantively.

Table 4

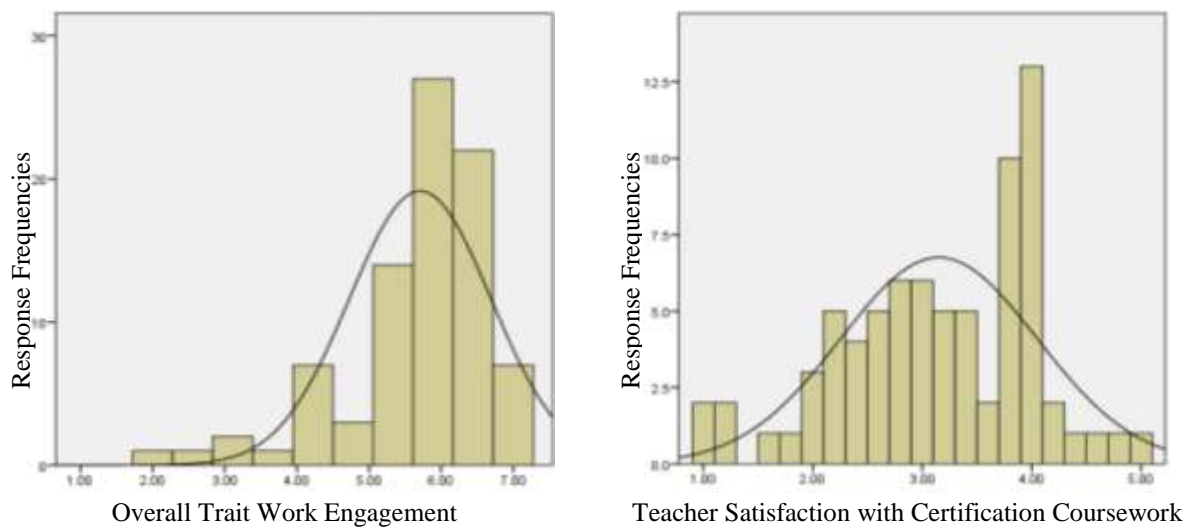
*Descriptive Statistics for Teachers' Responses to Work Engagement and Coursework Certification Satisfaction Items*

Variable and Cronbach's Alpha	Mean	Std. Deviation	<i>n</i>
Work Engagement (9 items; $\alpha = 0.935$ )	5.71	.98295	85
Work Engagement Subscales			
*Vigor (3 items; $\alpha = 0.913$ )	5.53	1.14042	86
*Dedication (3 items; $\alpha = 0.817$ )	5.89	1.00644	86
*Absorption (3 items; $\alpha = 0.780$ )	5.71	1.00763	85
Satisfaction with Certification			
Coursework (5 items; $\alpha = 0.897$ )	3.23	.92611	76

\*Vigor = high levels of energy and mental resilience, willingness to invest effort, and persistence in the face of difficulties

\*Dedication = strong involvement in one's work, and a sense of significance, enthusiasm, inspiration, pride, and challenge

\*Absorption = fully concentrated and happily engrossed, time passes quickly and one has difficulties with detaching oneself from work (Schaufeli & Bakker, 2010)



*Figure 9.* Comparison of the distribution of responses to work engagement and satisfaction with certification coursework items.

### **Work Engagement and CTE Teacher Satisfaction with Certification Coursework Received While in Service (Q1 and Q2)**

The data for work engagement and the three subscales of work engagement (vigor, dedication, and absorption) were correlated with the data for teacher satisfaction with certification coursework received while in service. Because this question was limited to those teachers who received their certification while employed as teachers, those who responded that they had completed their coursework before entering service

were excluded from this analysis. There were nine such teachers removed from the overall sample of 86 and one additional teacher who completed the work engagement section of the instrument, but not the section that dealt with satisfaction. Table 5 shows the descriptive statistics for only those teachers included in this analysis.

Table 5

*Descriptive Statistics for Only Those Teachers Who have Completed or are Currently Completing Coursework While in Service*

	Work Engagement	Satisfaction with Certification Coursework Received While in Service
<i>n</i>	76	76
Mean	5.6988	3.1526
Std. Deviation	1.01395	.89851

Table 6 shows the correlation between overall work engagement as well as its subscales and teacher satisfaction with certification coursework received while in service.

Based on the scale described by Cohen, Manion, and Morrison (2007, p. 521), this study employs the following descriptors for correlation strength (positive or negative):

- 0 - 0.1 = weak
- 0.1 - 0.3 = modest
- 0.3 - 0.5 = moderate
- 0.5 - 0.8 = strong
- 0.8 - 1.0 = very strong

Using this scale, it appears that there is a modestly significant correlation between overall work engagement and teacher satisfaction with in-service certification coursework.

Table 6 shows that absorption has the lowest correlation ( $r = 0.178$ ), followed by vigor ( $r = 0.189$ ), and dedication ( $r = 0.248$ ) with certification coursework satisfaction. Only the correlation for dedication is statistically significant at the alpha level of 0.05.

Table 6  
*The Correlation of Work Engagement and the Work Engagement Subscales with Teachers' Satisfaction with Certification Coursework Received While in Service*

	Work Engagement and Its Subscales	Satisfaction with Certification Coursework Received While in Service
Overall Work Engagement	Pearson Correlation	.218
	Sig. (2-tailed)	.060
	<i>n</i>	75
Vigor	Pearson Correlation	.189
	Sig. (2-tailed)	.103
	<i>n</i>	76
Dedication	Pearson Correlation	.248*
	Sig. (2-tailed)	.031
	<i>n</i>	76
Absorption	Pearson Correlation	.178
	Sig. (2-tailed)	.127
	<i>n</i>	75

\*Correlation is significant at the 0.05 level (2-tailed).

We may conclude that, if a teacher in the sample was more engaged at work, he/she was somewhat more likely to be satisfied with his/her certification coursework which was (or was being) received while in service, particularly if the teacher experiences a sense of dedication defined as “being strongly involved in one’s work, and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge” (Schaufeli and Bakker, 2010, p. 13).

### **School Administrative Structure as a Factor in Teacher Work Engagement and Satisfaction with Certification Coursework Received While in Service (Q3)**

In this section, data were examined to assess whether the administrative structure of the school had some relationship to work engagement and/or teacher satisfaction with in-service certification coursework. The three school structures in this study were:

- Comprehensive high schools (both academic and technical programs in the same building) that provide at least one administrator or mentor/coach who is responsible for the teachers' professional development and/or supervises their teaching practice.
- Large shared-time career and technical centers (CTCs) which are schools that provides career and technical education for students who share their time between the career center and their sending school. For the purpose of this study, a large CTC has an administrative structure which provides at least one administrator or mentor/coach, other than the executive director, who is responsible for the teachers' professional development and/or supervises their teaching practice.
- Small shared-time career and technical centers (A school that provides career and technical education for students who share their time between the career center and their sending school. A small CTC has an administrative structure with only one administrator and no principal assistant director, or curriculum/instructional coach.)

*Administrative Structure and Work Engagement.*

Table 7 shows the mean scores on a response scale of 1=Never through 7=Always for overall work engagement for the teachers in the various types of school administrative structures. The closeness of these mean scores indicates that the administrative arrangements in a given school had relatively little influence on the mean work engagement scores.

Table 7

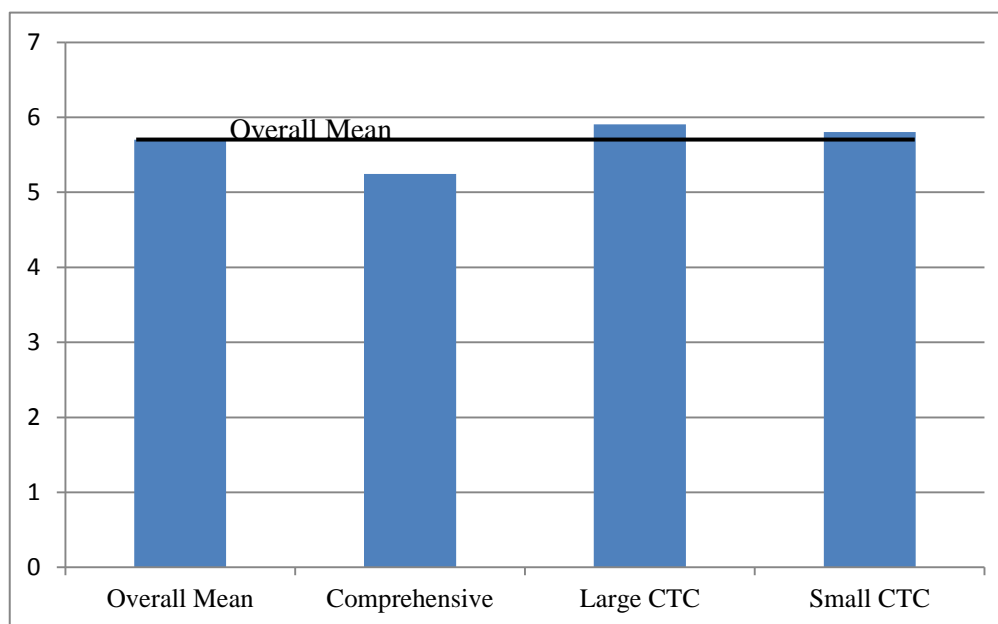
*Mean Work Engagement Scores of Respondents from Schools of Varied Administrative Structures*

	Administrative Structures		
	Comprehensive technical high school	Large shared-time CTCs	Small shared-time CTC
Mean Work Engagement Scores	5.28	5.90	5.8
SD	1.2	0.64	1.03
<i>N</i>	25	35	22

The structure of comprehensive high schools and large shared-time CTCs is very similar having multiple staff with at least one staff member committed to supporting teacher effectiveness. This makes it interesting that the comprehensive schools scored below and the large CTCs scored above the small CTCs (though not by much). In addition, to the narrow range of scores across administrative structures, the fact that the two similar structures had scores both slightly above and below the one that differed,



indicated that there is probably no or only a very small correlation between these structures and the teachers' overall work engagement (Figure 10).



*Figure 10.* A comparison of means of work engagement scores across the various school structures of the respondents. The line labeled *Overall Mean* provides a visual representation of the how little teachers' responses differ across school structure.

In order to achieve a better comparison and group the similar school structures, I combined the comprehensive schools and the large CTCs into one category (because of the similarities in their administrative structures) and compared the teachers' work engagement responses from this aggregate to the responses of the teachers in the small CTCs. Using the formula  $r = \frac{\sum xy}{\sqrt{(\sum x^2 \cdot \sum y^2)^{1/2}}$ <sup>1</sup>, I arrived at the *r*-value of 0.076. Table

---

<sup>1</sup> *x* and *y* are the deviation scores of work engagement and school structure respectively.

8 is the SPSS output of the same data. The SPSS calculation represents a point biserial correlation, because one variable is nominal and naturally dichotomous with two levels (administrative structure) correlated with work engagement score treated as interval data ( $r_{pb} = 0.74$ ).

Table 8

*A Correlation of work engagement Scores of the Respondents Compared by School Structure*

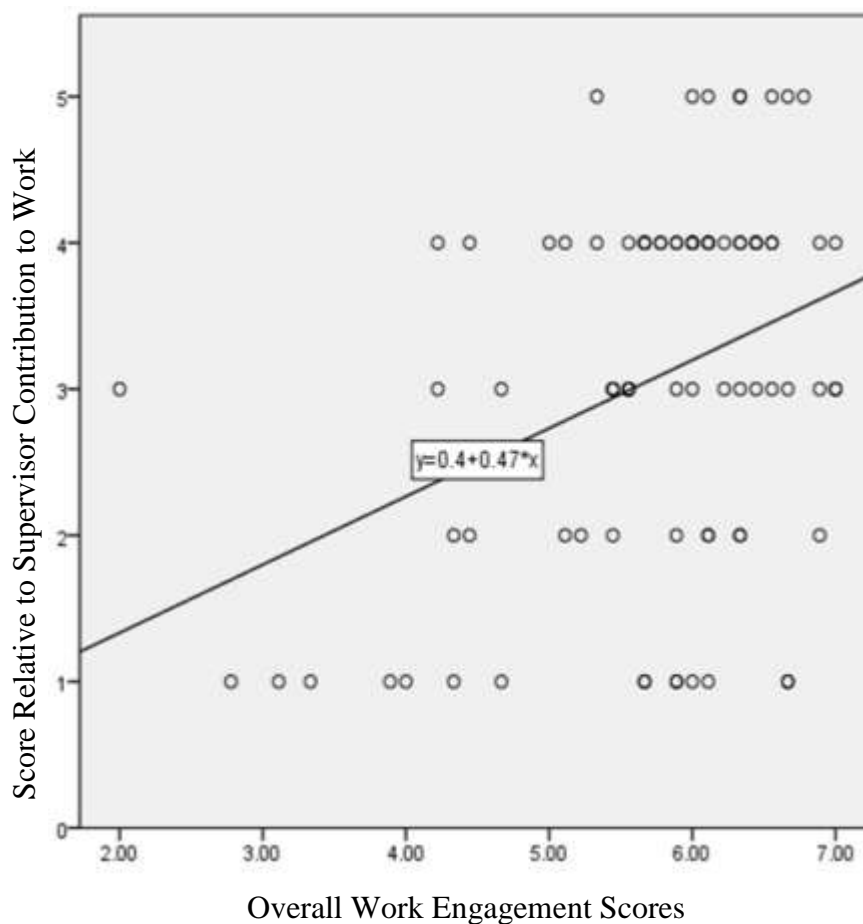
	Work Engagement Scores from CTE Teachers in Schools with Small Administrative Structures	
Work Engagement Scores from CTE Teachers in Schools with Large Administrative Structures	Point Biserial Correlation	.074
	Sig. (2-tailed)	.505
	N	83

Research supports the logical reasoning that the way in which supervisors relate to and direct instructional staff affects teachers' work satisfaction and success (Barak & Waks 1997; Garet et al, 2001; Ghitulescu, 2013; Nir & Bogler, 2008; Delvaux et al. 2013). Knowing this, it seems appropriate to tease out more data regarding administration and it's correlation to teachers' work engagement.

In an effort to gain added insight, I had included the following item in the survey instrument: "Please indicate your agreement with the following statement on a scale of 1-5 (1 = strongly disagree and 5 = strongly agree). I am inspired and invigorated in my work by the following." The instrument invited this response with regard to supervisors, peers, students and the overall atmosphere of the teachers' schools.

Figure 11 shows how the scores in the category of “my supervisor” were related to overall work engagement. The best fit least squares line indicates that the more positively teachers rated their supervisor on this scale, the higher their overall work engagement tended to be. The Pearson correlation of overall work engagement to teachers’ belief that the supervisor contributed to their sense of inspiration and invigoration at work was  $r = .364$  (significant at an alpha level of 0.01).

These two calculations, namely the non-significant correlation of administrative



*Figure 11.* A comparison of teacher responses to the survey item assessing the degree to which they agree with a statement regarding their supervisor’s contribution to their sense of being inspired and invigorated at work as compared to their responses on the work engagement items of the survey (n = 86).

*structure* with work engagement on the one hand, and the significant relationship of work engagement to positive responses regarding administrative *contribution* seem to indicate that supervisory *structure* is not as important as supervisory *support*. Work engagement is not influenced so much by the number of administrators as by their supervisory behavior and/or character.

### ***Administrative Structure and Certification Coursework Satisfaction***

Table 9 shows the mean scores for teachers' satisfaction with certification coursework received while in service compared across administrative structures. The teachers' satisfaction with certification coursework did not vary substantively with the administrative structure of their schools. In fact, the teachers in large and small shared-time CTCs reported the same level of satisfaction with their certification coursework received while in service ( $r = 0.153$ ;  $p = 0.187$  for  $n = 76$ ).

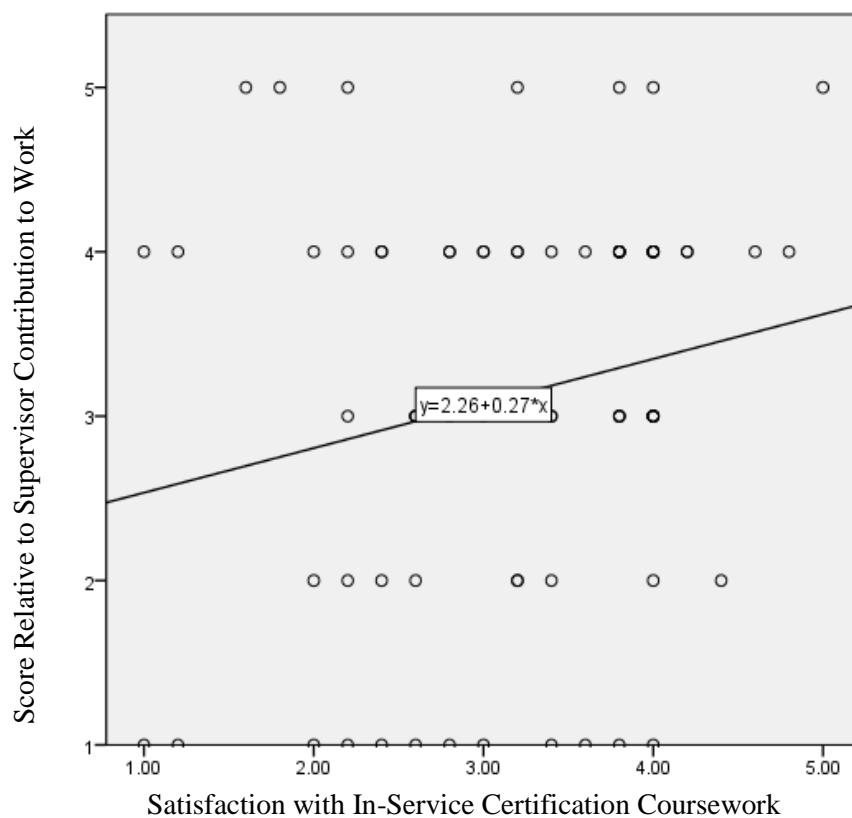
Once again, to shed more light on the contribution of administration, I created a scatterplot with a best fit least squares line to illustrate the relationship of the teachers' positive responses regarding their supervisors as influencers of their sense of invigoration and inspiration at work and their satisfaction with certification coursework (Figure 12). There appeared to be a modest positive correlation between these variables. The Pearson correlation of these variables is  $r = 0.2$  ( $p = 0.084$  for  $n = 76$ ).

Table 9

*Mean Scores for Teachers' Satisfaction with Certification Coursework Received While in Service Compared Across Administrative Structures*

	Administrative Structures		
	Comprehensive technical high school	Large shared-time CTCs	Small shared-time CTC
Mean Satisfaction with Certification Coursework Scores	2.92	3.36	3.36
	SD = 0.94	SD = 0.84	SD = 0.89
	n = 21	n = 31	n = 22

Response scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.



*Figure 12.* A scatterplot and least squares line to illustrate the teachers' assessment of their supervisors' contribution to their sense of inspiration and invigoration at work as compared to their satisfaction with the certification coursework they receive while in service. ( $r = 0.20$ ;  $p = 0.084$ ;  $n = 76$ )

## Additional Results

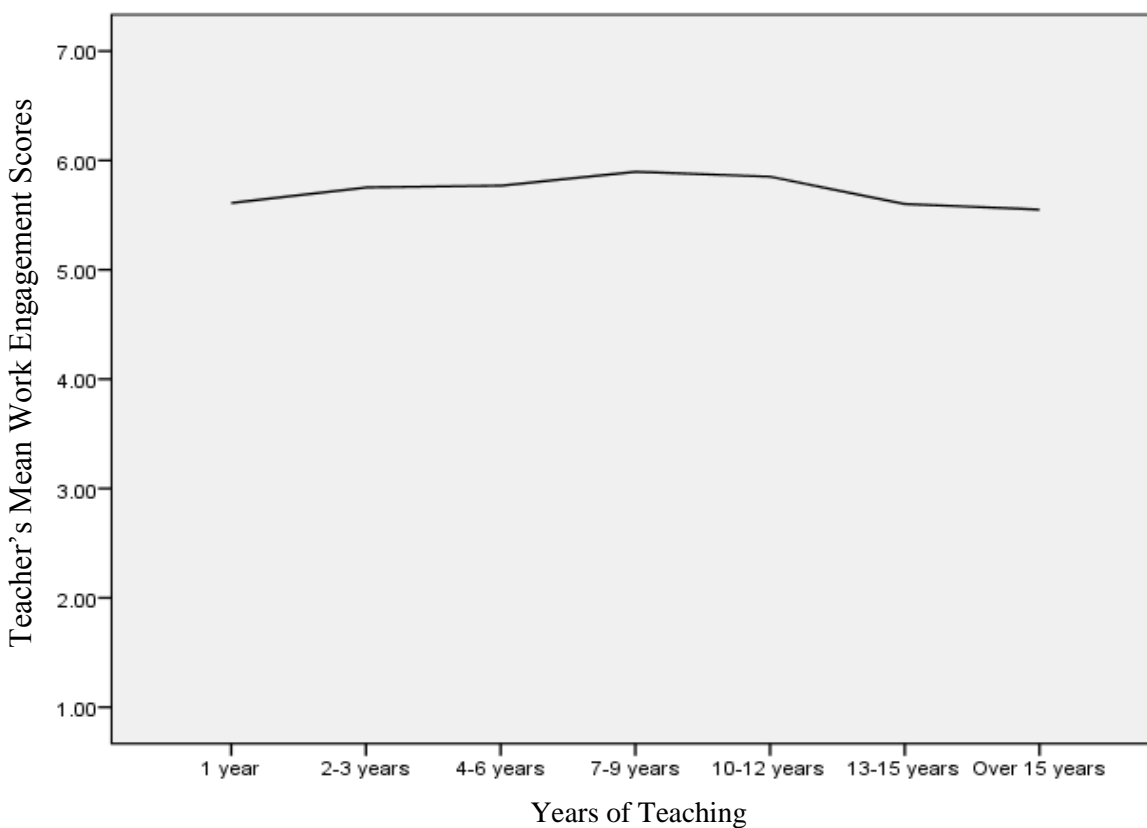
### The Effects of Time and Experience on Work Engagement

Table 10 shows the frequency of responses to the question of how many years a teacher has been teaching. Does a teacher's length of time in service alter their degree of work engagement?

Table 10  
*Frequency of Responses to the Question of How Many Years a Teacher has been in Service*

	Frequency	Valid Percent
1 year	2	2.3
2-3 years	11	12.6
4-6 years	14	16.1
7-9 years	15	17.2
10-12 years	9	10.3
13-15 years	12	13.8
Over 15 years	24	27.6
Total	87	100.0

Figure 13 shows a graphic representation of the fluctuation of teacher satisfaction over years of service. The line, being nearly flat across all years of service reported, indicates that teachers' responses regarding work engagement do not fluctuate greatly depending on the number of years they have taught.



*Figure 13.* A graphic representation of the variation in teachers' mean work engagement scores compared by number of years in service.

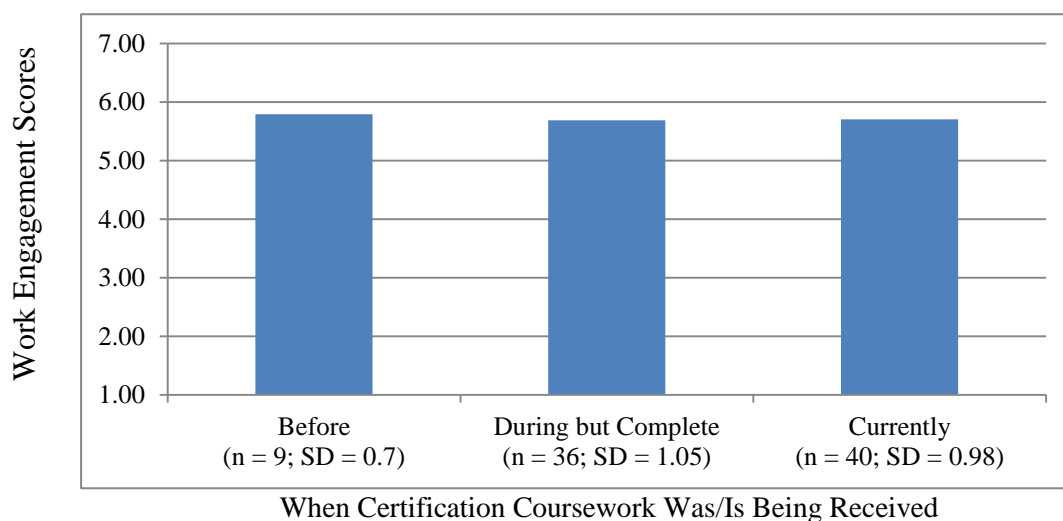
## **The Effects of When or How Certification Was Received**

### ***Effect on work engagement***

Teachers in this survey received their certification in one of three ways relative to their time in service: (a) completed before entering service, (b) completed while in service, (c) currently receiving it while in service at the time of the survey. Figure 14

shows the variation of work engagement as measure against when teachers received their certification coursework.

*When a person received their certification coursework appears to have no effect on their overall work engagement.*

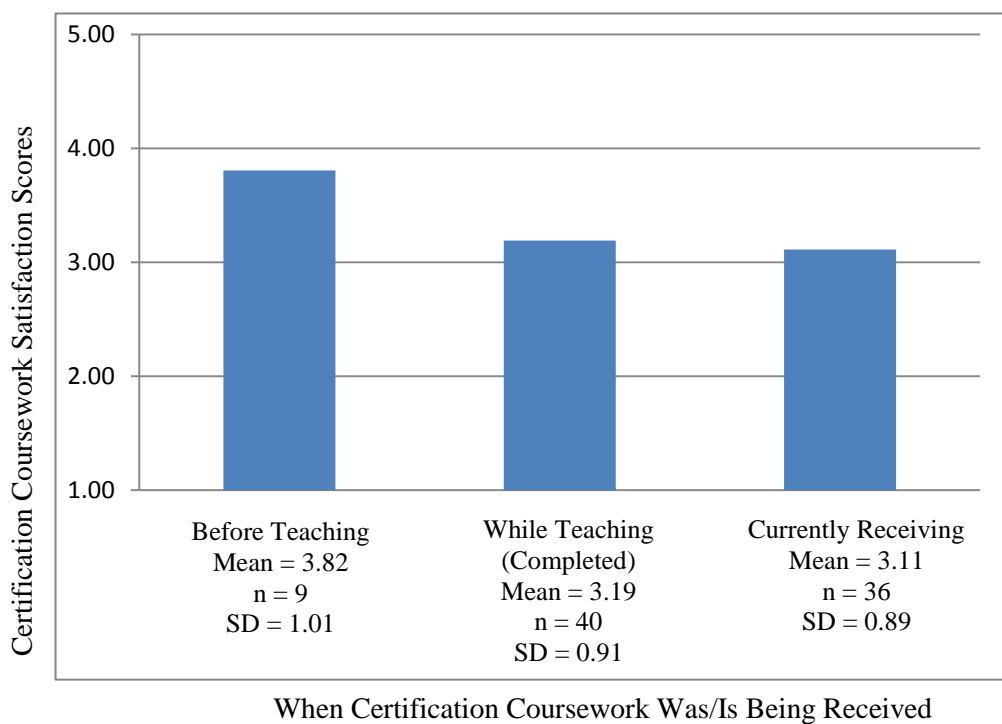


*Figure 14.* A comparison of teachers' work engagement scores categorized by when they received/are receiving their certification coursework.

### ***Effect on Teacher Satisfaction with Certification Coursework***

Figure 15 shows the variation of teacher satisfaction with certification coursework as measured against when and how teachers reported they received it. The variation is not great, but could indicate that satisfaction with certification coursework may be, in small part, a function of when it was received.





*Figure 15.* A comparison of scores regarding teachers' satisfaction with certification coursework categorized by when it was received.

### What motivates teachers?

As mentioned above, the following item was included in the survey instrument:

“Please indicate your agreement with the following statement on a scale of 1-5. 1 = strongly disagree and 5 = strongly agree. I am inspired and invigorated in my work by the following.” This item provided an opportunity to respond to that statement with regard to four possible influencers on the teachers' sense of invigoration and inspiration in their work: supervisors, peers, students and the overall atmosphere of the teachers' schools. It was scored with a Likert-type scale from 1-5. Table 11 displays the results of the responses to this item ( $n = 85$ ).

Table 11  
*A Comparison of Four Possible Influences on Teachers' Sense of Invigoration and Inspiration in Their Work*

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Average of Individual Responses	Overall Score
Supervisor	15 (18%)	12 (14%)	20 (24%)	30 (35%)	8 (9%)	3.05	51.8
Peers	3 (4%)	2 (2%)	16 (19%)	50 (59%)	14 (16%)	3.82	65
Students	1 (1%)	0 (0%)	6 (7%)	44 (52%)	34 (40%)	4.29	73
School Atmosphere	6 (7%)	17 (20%)	26 (31%)	27 (32%)	9 (10%)	3.19	54.2

To arrive at the overall score, each level of the Likert-type scale was given a value corresponding to its place in the scale. Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, and Strongly Agree = 5. Each of these values was multiplied by the number of times it occurred and then divided by the number of categories. For example, to arrive at the overall score for supervisors (referring to Table 11), the formula is:

$$((15 \times 1) + (12 \times 2) + (20 \times 3) + (30 \times 4) + (8 \times 5)) / 5$$

Table 12 shows the correlations of these responses to one another. Of interest is the fact that the responses regarding supervisors were not correlated significantly to those regarding peers or students. On the other hand, it is clearly correlated to the responses

regarding the overall atmosphere of the school. This suggested that the relationship a teacher had with their supervisor was strongly associated with that teacher's assessment of the overall atmosphere of their school.

Table 12

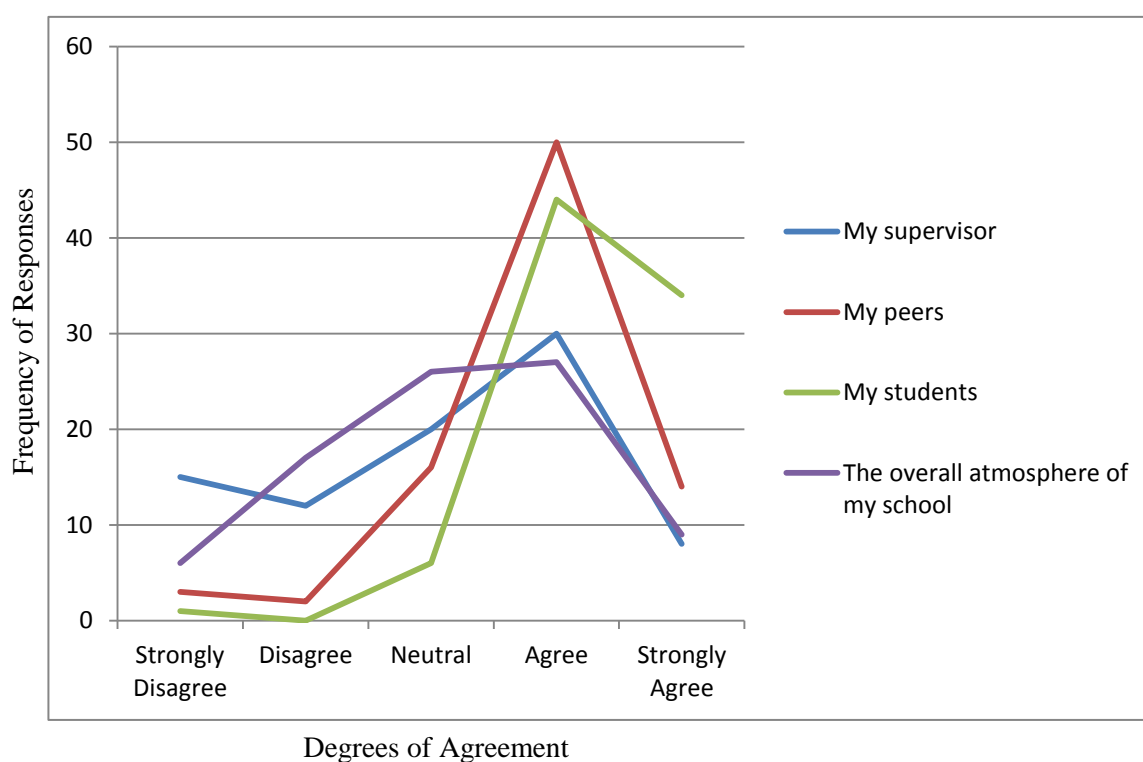
*Pearson Correlation of the Responses of Teachers Regarding Possible Influencers on Their Sense of Invigoration and Inspiration in Their Work*

		Supervisor	Peers	Students	School Atmosphere
Supervisor	Pearson Correlation	1	-.003	.145	.570**
	Sig. (2-tailed)		.977	.186	.000
	<i>N</i>	85	85	85	85
Peers	Pearson Correlation	-.003	1	.106	.162
	Sig. (2-tailed)	.977		.333	.140
	<i>N</i>	85	85	85	85
Students	Pearson Correlation	.145	.106	1	.190
	Sig. (2-tailed)	.186	.333		.082
	<i>N</i>	85	85	85	85
School Atmosphere	Pearson Correlation	.570**	.162	.190	1
	Sig. (2-tailed)	.000	.140	.082	
	<i>N</i>	85	85	85	85

\*\* Correlation is significant at the 0.01 level (2-tailed).

Figure 16 shows a line graph comparing the responses to this item. The pattern reflects the fact that people scored these work environment components with fair consistency. If they scored some of them highly, they tended to score all of them more

highly. Supervisors get the lowest average score, while students get the highest average score as motivators.



*Figure 16.* A comparison of the frequency of responses to questions regarding degrees of agreement as to how positively four possible influences affect teachers' sense of invigoration and inspiration at work.

Further analysis showed that these scores were not significantly affected either by the length of time a teacher had been in service or the administrative structure of the school. This steadiness over time and across structures is consistent with the other findings in this study. That is, neither the length of time in service, nor the administrative structure of the school in which teachers serve had a significant impact on how teachers

rated these possible influences on their sense of invigoration and inspiration in their work.

The results returned by the responses to this item were interesting, and they contributed to and enriched the data of the present study. These contributions will be discussed further in chapter 5; however, because these results are not central to the present study I have included further graphic analysis of them in Appendix C.

### **Summary**

There appeared to be a modest correlation between work engagement and teacher satisfaction with in-service certification coursework for CTE teachers in Pennsylvania (Q1). Due to the internal consistency of the measuring instrument for work engagement, each of the subscales (vigor, dedication, and absorption) indicated a modest to moderate correlation with teacher satisfaction with in-service certification coursework with the subscale of dedication being the most highly correlated (Q2). With regard to the administrative structure of the school, there seemed to be no significant correlation to either work engagement or teacher satisfaction with in-service certification coursework. On the other hand, it did appear that the relationship of administrators with teachers and administrators' leadership behaviors in this study affected the teachers' work engagement and their perspective regarding the overall atmosphere of their school.

The major findings are illustrated in Figure 17.

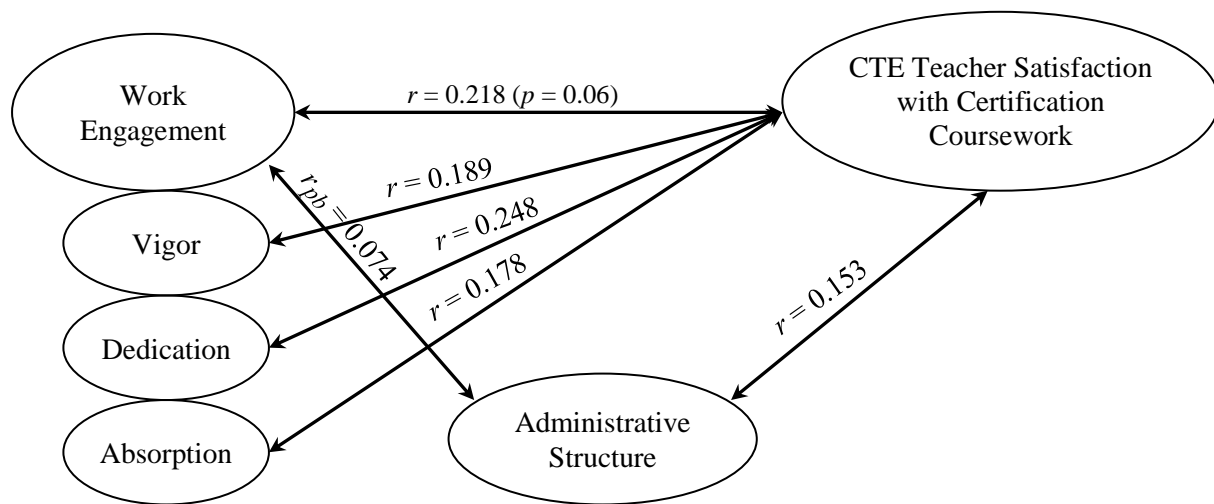


Figure 17. Illustration of the six relationships measured in the **bivariate analysis** with correlations

## Chapter 5

### Discussion and Recommendations

Certification coursework received while in service is a common, shared-experience among CTE teachers in Pennsylvania. It is important to the goal of providing a quality education for students that CTE teachers get the greatest possible value from that coursework. One of the connections this study showed is that there was a modest positive correlation between work engagement and teacher satisfaction with certification coursework received while in service. This may be due, in part, to the fact that this coursework is *work-related*, i.e. directly related to the work experience in which they may or may not be engaged. This study also found that the administrative structure of a school has little or no correlation with satisfaction with certification coursework received in service.

My personal motivation for choosing this area of study was to think about what might motivate administrators to improve teachers' job resources and what teachers may do to increase their own personal resources in order to improve teacher engagement and, consequently, their overall performance and effectiveness, which includes satisfaction with and benefit from certification coursework received while in service.

### The Significance of the Insignificant

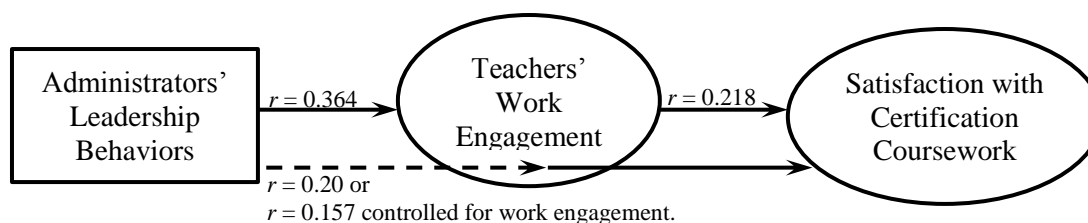
I expected to find that, if teachers had the availability of a member of the administrative staff whose job it was to provide support and supervision in their instructional process, they would experience a higher degree of work engagement and also would be more satisfied in their certification coursework received while in service. This did not turn out to be the case. An administrative structure that provided for such a person had little or no correlation to either of these outcomes (Q3) in this study. The fact that administrative structure had little or no *statistical* significance has *practical* significance. A school with insufficient administrative staff may have difficulty completing a number of tasks, or complying with various mandates, or providing a variety of student services; however, the staff in such a school should have no fear that its teachers can be engaged in their work and be profiting from their certification coursework.

What I found to be significant by accident was more intriguing. The leadership behaviors of administrators have more influence on teachers' work engagement (or lack of it) than any other factor in this study ( $r = 0.364$ ). In turn, the teachers' level of engagement (or lack of it) is also correlated ( $r = 0.218$ ) to their level of satisfaction with their certification coursework (Q1 & Q2). In addition, administrators' leadership behaviors have a modest direct correlation to satisfaction with certification coursework received while in service. This Pearson correlation is  $r = 0.20$ . I also ran a partial correlation test using SPSS software controlling for the influence of work engagement. The results of that test showed a direct correlation of leadership behavior to satisfaction



with in-service certification coursework of  $r = 0.157$ . The important implication of this is that, since leadership behaviors had a direct correlation with teachers' work engagement, which in turn had a direct correlation with satisfaction with certification coursework, these behaviors may, in addition to the modest direct effect on satisfaction with certification coursework, have an indirect effect as well (Figure 18).

This means that the administrators' leadership behaviors may be correlated directly to the teachers' work engagement (affecting performance) and in a small way correlated directly to satisfaction with certification coursework received while in service (further affecting performance). In addition, these same behaviors may be related *indirectly* to teachers' satisfaction with their certification coursework as mediated by



*Figure 18.* The possible indirect correlation of administrators' leadership behaviors to satisfaction with certification coursework received while in service. The two upper arrows illustrate the *direct* correlations between administrative leadership behaviors and teachers' work engagement, and between teachers' work engagement and their satisfaction with certification coursework. The lower arrows illustrate the possible *indirect* correlation or influence of administrative leadership behaviors on teachers' satisfaction with certification coursework as mediated through teachers' work engagement. Note the direct correlation of leadership behaviors and satisfaction with in-service certification coursework is  $r = 0.20$ . When controlled for work engagement, the correlation is  $r = 0.157$ .

teachers' overall work engagement creating an even greater total effect on performance.

This study is not conclusive in showing this effect. Further sampling with an instrument

more specifically designed to the purpose, and more sophisticated statistical analysis (statistical equation modeling/path analysis) would be necessary to establish these effects; however, this study showed that it may be likely.

### **What Administrators Can Do**

The survey instrument used in this study included a number of items that were intended to gather information for further analysis and not necessarily to contribute to this study. It was intended that these items would only be brought into this study if they revealed something significant. Two items produced results that supplement this study.

One such item that has already been mentioned is the one that allowed teachers to rate four influencers (supervisor, peers, students, and school atmosphere) regarding how they contributed to the teachers' invigoration and inspiration at work. Another is the set of four items that allowed teachers to provide qualitative data by answering the following questions:

- What contributes most to your desire to go to work?
- What contributes most to your desire to do your best at work?
- What hindrances do you experience in being your best as a teacher?
- What do you dislike most about your work?

The answers to these four questions shed further light on the "four influencers" responses. This is not a full analysis of that section; that will wait for a later study. It should be noted, however, that it returned results that intersect with the idea that administrators' leadership behaviors affected the outcomes in this study.

The qualitative data contained numerous complaints about school administration without a single positive comment in all of the responses.

This information should not be taken as a sweeping, general condemnation of leadership styles. In the “four influencers” item, administrative supervisors receive a number of low marks, but they also received a number of high marks as well (see Appendix C). Eighty-five percent of those who gave high scores (4 = Agree, or 5 = Strongly Agree) in this item simply did not mention their supervisors in the qualitative section – either positively or negatively. For some reason, if teachers disapproved of their supervisor, they said so; however, if they approved of their supervisor, they gave them a high mark in the “four influencers” item but did not acknowledge their approval in the qualitative items.

Many of the negative comments were general. For example, in answer to the question, “What do you dislike most about your work?” there are such answers as “administration,” or “director.” Other comments are more specific dealing with such topics as unnecessary paperwork assigned by the administration, lack of support, lack of positive reinforcement, supervisory arrogance, disconnection from the classroom experience, lack of communication, administrators who do not have a CTE background, and administrators taking credit for the results of teachers’ work.

In no case did teachers cite the lack of administrative staff as a hindrance or dislike. They did not indict the structure of the administration; their grievances were far more personal. In light of these teacher responses, this study suggests that administrators should seek to provide those work-related job resources that make it more likely that teachers will be engaged at work. In particular, they should look to their leadership

behaviors as a possible influence on teachers' work engagement (or lack thereof) as well as its influence on other positive outcomes (DeRue, Nahrgang, Wellman, & Humphrey, 2011).

### **What Teachers Can Do**

Research indicated that both job resources and personal resources contribute to work engagement (Schaufeli & Bakker, 2010). The results of this study suggested that teachers should seek to cultivate those personal resources that make it more likely that they will be engaged at work and more satisfied with their certification coursework (Guskey 1988). Both administrators and teachers share the responsibility to provide for teachers' work engagement.

It may be interesting to turn this study around and see how teachers contribute to the job resources and, therefore, to the work engagement of administrative supervisors. CTE directors and principals may have their own story to tell.

### **Limitations**

As a correlational observation, this study was limited in that it cannot provide evidence of directional cause; it could only demonstrate whether or not certain factors covary.

In addition, this study relied on self-reported data and not observation. There are inherent weaknesses of self-reported data such as the social or ethical desirability bias

which influences respondents to rate themselves more positively than is reflected by reality. Teachers may report positive data about themselves that is not consistent with fact (Ebert-May et al., 2011). There is also the influence of introspective ability, in that, a respondent who makes every effort to be honest, may not have the ability to report their thoughts accurately.

A problem that might occur in the interpretation of the data stems from the fact that the data revealed that teachers report work engagement levels similarly regardless of their length of time in service or their level of certification. This is not the same thing as saying that it shows that teachers' work engagement remains stable over time. This could be an assumption which may or may not be correct, because this was a cross-sectional survey. This survey demonstrated only that teachers of varying numbers of years in service reported similar levels of work engagement. It does not show that individual teachers' levels of work engagement remained consistent over their years in service. A longitudinal study would be necessary to establish this with any degree of reliability.

Finally, I note that these results are not necessarily generalizable to all of the schools in the region of Pennsylvania where the survey took place. Nor is it generalizable to all schools and CTE teachers in the state of Pennsylvania. Conditions in various schools may differ widely, as would the opinions and perceptions of individual teachers.

## **Recommendations for Further Research**

### **The Relative Weights of Job Resources and Personal Resources**

This study showed that, among the work engagement subscales of vigor, dedication, and absorption, dedication received the highest score and shows the greatest correlation with satisfaction. However, this study did not show if this was a result of workplace influences (job resources) or personal factors (personal resources). Dedication can be affected by either of these factors/resources, as can overall work engagement and the other subscales as well (Schaufeli & Bakker, 2010). It would be interesting to learn which resources, job or personal, have the greatest effect on work engagement and its subscales.

### **The Effects of Time on Teacher Satisfaction with Certification Coursework**

It appears from this study that years in service may have an effect on a teacher's sense of satisfaction with their certification coursework. It would be interesting to know how strong this tendency is and what may influence it. Do teachers tend to be more satisfied with their coursework over time as a result of professional experience providing opportunities for them to appreciate and apply what they learned while earning their certification, or may it be that time tends to erase the memory of the difficulties or inconveniences of coursework? Or both?

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## Appendix A

### Survey Instrument

1. Teachers from three types of secondary career and technical schools are included in this survey. Please indicate the category of school in which you teach.  
  
 Comprehensive technical high schools (A school that students attend full time, and in which they take all their academic courses as well as their career and technical program.)  
  
 Large shared-time career and technical centers (CTCs). (A school that provides career and technical education for students who share their time between the career center and their sending school. For the purpose of this study, a large CTC has an administrative structure which provides at least one administrator or mentor/coach, other than the executive director, who is responsible for the teachers' professional development and/or supervises their teaching practice. Usually this person is an assistant director, principal, or curriculum/instructional coach).  
  
 Small shared-time career and technical centers (A school that provides career and technical education for students who share their time between the career center and their sending school. A small CTC has an administrative structure with only one administrator and no principal assistant director, or curriculum/instructional coach.)
2.  How many years have you been teaching, including the current academic year?
3. What is your current level of certification?  
 Emergency  
 Intern  
 Vocational I  
 Instructional I  
 Vocational II  
 Instructional II
4. How did you receive your certification training?  
 I completed my coursework before I became a teacher.  
 I am currently receiving my certification training while employed as a teacher.  
 I have finished my certification, but I received my training while employed as a teacher.

The following 9 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, choose “0” (zero) in the space after the statement. If you have had this feeling, indicate how often you feel it by choosing the number (from 1 to 6) that best describes how frequently you feel that way.

The nine items in this section are taken from Schaufeli and Bakker (2003) and are available at <http://www.wilmarschaufeli.nl/downloads/test-manuals-2/>

For the following statements, “certification preparation coursework” refers to the coursework that you have taken or are currently taking from the university that provides your teacher training. Please rate your agreement with these statements on a scale of 1-5. 1 = strongly disagree and 5 = strongly agree.

The five items in this section are adapted from Nir, A. E., & Bogler, R. (2008). The original instrument is available at doi:10.1016/j.tate.2007.03.002.

#### Additional Items

19. I am inspired and invigorated in my work by (Five-point Likert type scales for each bullet. 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree)
- My supervisor
  - My peers
  - My students
  - The overall atmosphere of my school
20. Please give an example of an approach to delivering your certification coursework that you have found beneficial and how it may have improved your teaching practice.
21. The following questions are intended to measure what CTE teachers experience in the workplace that influences how engaged they are in their work. For these questions you may create a brief list of one-word answers or you may expand your answers if you wish. Feel free to list only one or more than one influence. If you list more than one influence, please arrange them in order from the greatest influence to the least.
- What contributes most to your desire to go to work?
  - What contributes most to your desire to do your best at work?
  - What hindrances do you experience in being your best as a teacher?
  - What do you dislike most about your work?

## **Appendix B**

### **Expert Evaluation of Items 14-18 of the Research Instrument**

What follows is the body of a letter addressed to panel of CTE experts regarding the content validity of items 14-18 of the research instrument.

---

I am currently finishing my PhD in workforce education and development at Penn State University and am working on my dissertation. The statistical methodologist on my doctoral committee has suggested that I reach out to CTE experts who have published research experience for input on a particular section of my research instrument. In order to do that, I have written and attached a document that describes what I need in a way that is as self-explanatory and brief as I could make it. It is a one-page explanation which includes two brief yes or no questions. Simply put, the document asks you to help me establish content validity of five of the items in my research instrument.

My committee may require me to list the names of my "expert witnesses." If not, they will remain anonymous. If required, your name may be included in the methodology section of my dissertation and possibly your credentials/current position. If you decide to provide your input, please let me know if I also have your permission to refer to you in my paper as one of my experts.

Thank you for your consideration in this matter.

Sincerely,

Steve Park

### Email Attachment

I am currently working on my dissertation at Penn State University as I complete the requirements for a PhD in Workforce Education and Development. In the process, I will be conducting research regarding the satisfaction that Pennsylvania career and technical education (CTE) instructors experience with the certification preparation coursework they are receiving or have received while in-service (as opposed to pre-service preparation). To quote the study, "...teacher satisfaction with teacher certification coursework is defined as teachers' belief that the coursework which they are required to take is valuable to them professionally."

In order to complete that study, I will be administering a survey instrument intended to measure teacher satisfaction with certification coursework. The questions in my instrument were designed for and used successfully in a previous study and the authors have given me permission to use their questions. In that study (Nir and Bogler, 2008), the authors determined that the instrument had a good degree of internal consistency (Cronbach's alpha of .81). My current goal is to establish the content validity of these questions.

To that end, I have been advised by my statistical methodology mentor to contact a panel of CTE experts with published research experience who will verify (or not) that these statements scored on a five-point Likert-type scale a) can be used to accurately measure teacher satisfaction with certification coursework, b) are appropriate for that purpose to an audience of CTE instructors.

Would you be so kind as to provide expert testimony to this end? If so, here are the items and the two questions I need to have answered:

- 
1. The certification preparation courses promote my professional abilities.
  2. The certification preparation courses enable me to bridge professional gaps.
  3. The certification preparation courses help me to fulfill my professional assignments.
  4. During my daily work I use knowledge and techniques that I acquired during my certification preparation courses.
  5. The certification preparation courses improve my professional conduct as a teacher.

As a person with CTE research experience, do you believe these statements scored on a five-point Likert-type scale:

- a) can be used to accurately measure teacher satisfaction with certification courses?
  - b) are appropriate for that purpose to an audience of CTE instructors?
- 

Thank-you for your help,  
Steve Park

Reference:

Nir, A. E., & Bogler, R. (2008). The antecedents of teacher satisfaction with professional development programs. *Teaching and Teacher Education* 24(2), 377-386.  
doi:10.1016/j.tate.2007.03.002

Respondents:

Robert W. Clark, PhD

Executive Director Center for Professional Development in Career and Technical Education, College of Education, Temple University

Howard R. D. Gordon, Ed. D

Professor of Career & Post-secondary Technical Education, Department of Teaching & Learning (Post-secondary Education), University of Nevada, Las Vegas.  
President, Association for Career and Technical Education Research (ACTER)

Cynthia Pellock, PhD

Associate Professor of Education (Workforce Education and Development) and Director or the Professional Personnel Development Center (Career and Technical Education), Pennsylvania State University

Mark Threeton, PhD

Assistant Professor of Education (Workforce Education and Development) and Associate Director of the Professional Personnel Development Center (Career and Technical Education), Pennsylvania State University

Edgar Yoder, PhD

Professor of Agricultural & Extension Education, Dept. of Agricultural Economics, Sociology and Education, Pennsylvania State University

Richard Zinser, Ed. D

Professor of Career and Technical Education, Western Michigan University

Chris Zirkle, PhD

Associate Professor in Workforce Development and Education, College of Education and Human Ecology, Ohio State University

## Appendix C

### **Graphic Analysis of Item 19 of the Research Instrument**

This appendix provides a graphic analysis of the following item on the survey instrument:

“Please indicate your agreement with the following statement on a scale of 1-5. 1 = strongly disagree and 5 = strongly agree. I am inspired and invigorated in my work by the following.” This item provided an opportunity to respond to that statement with regard to the teachers’ supervisors, peers, students and the overall atmosphere of the teachers’ schools. It was scored with a Likert-type scale from 1-5.

### **Response by Influencers of a Sense of Invigoration and Inspiration in One’s Work**

Figure C1 is a bar graph that shows the mean responses of teachers regarding their degree of agreement with the statement, “I am inspired and invigorated in my work by the following:” with regard to the four influencers of supervisor, peers, students, and school atmosphere.

Figure C2 Shows a comparison of the degrees of agreement to this statement separated by the four influencers.



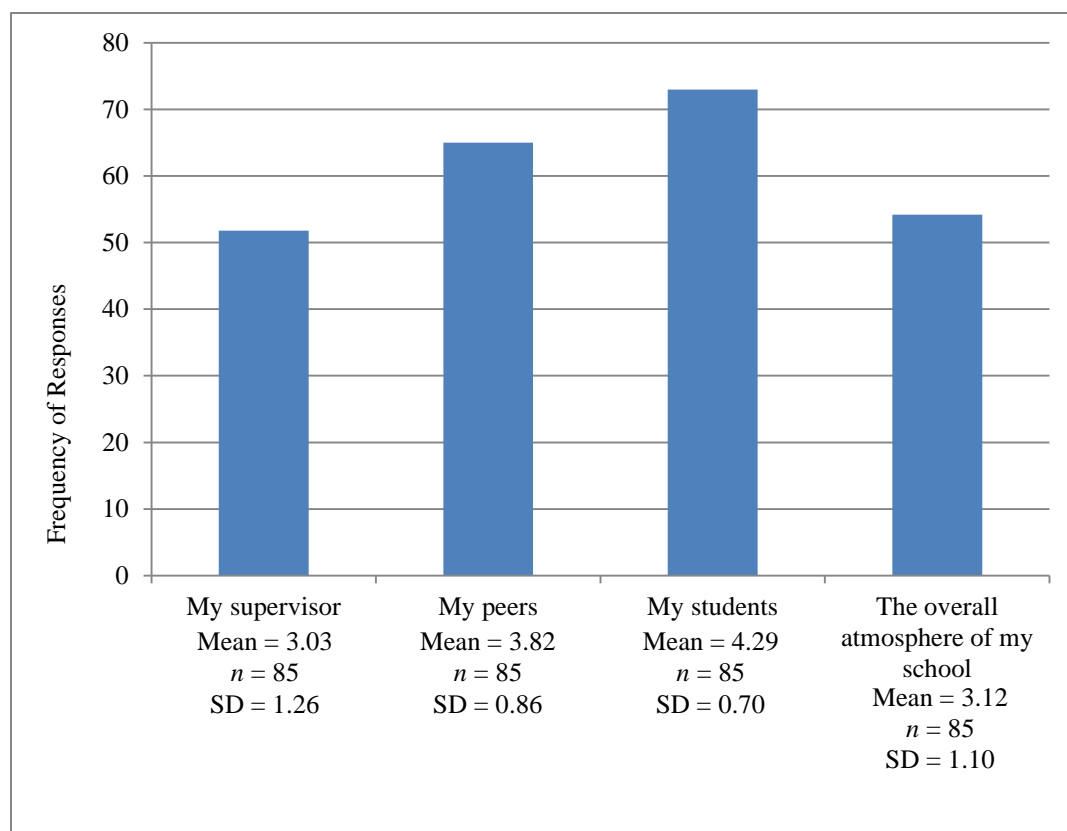


Figure C1. *The compared means of the measures of the degree to which teachers report that they are inspired and invigorated in their work by their supervisor, peers, students, and school atmosphere.*

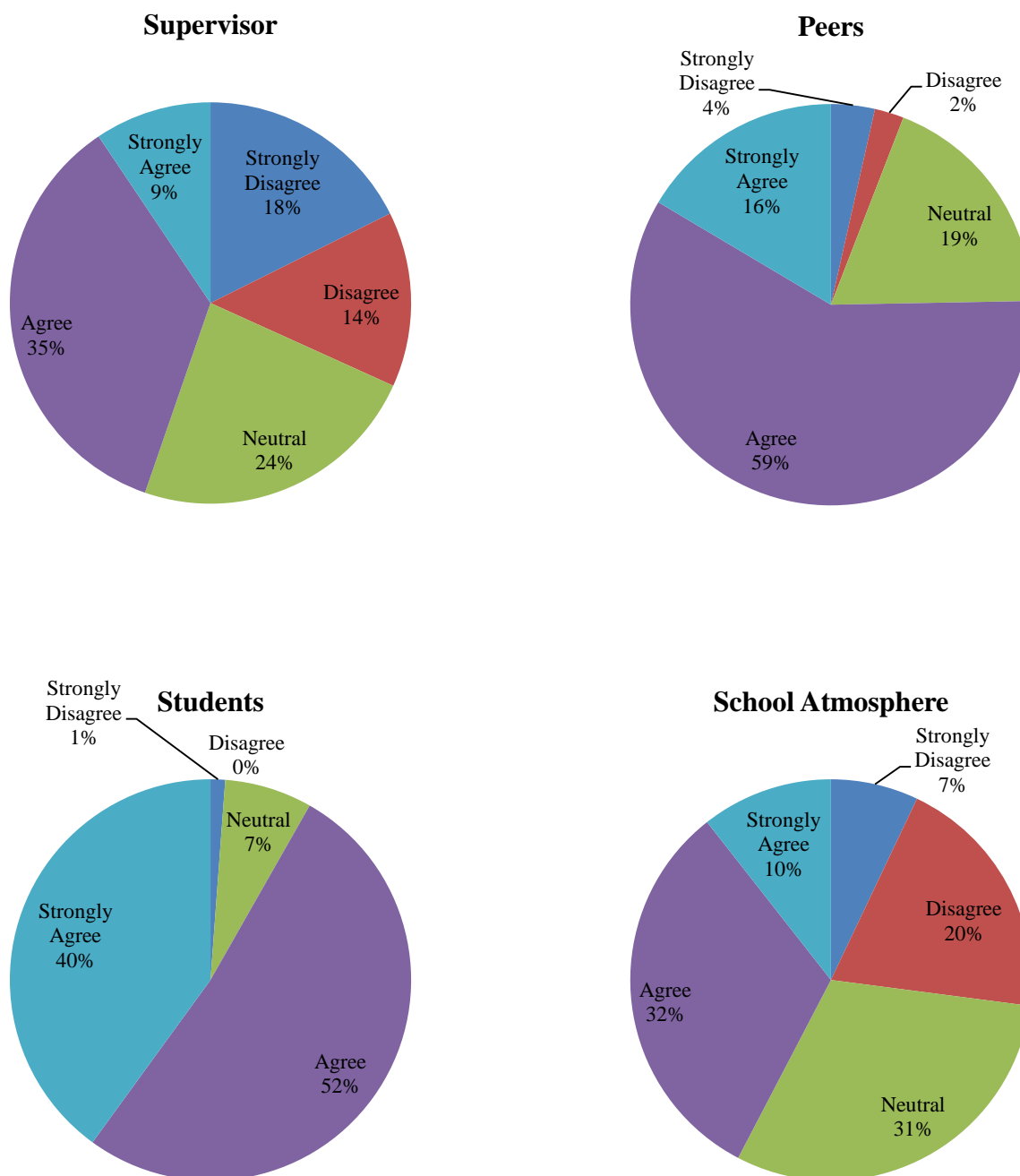


Figure C2. A comparison of the percentages of responses by influencer. Responses to the statement “I am inspired and invigorated in my work,” are measured on a scale of 1-5 (1 = Strongly Disagree, 5 = Strongly Agree) with reference to four influencers: supervisor, peers, students, and school atmosphere.

### Responses by Degrees of Agreement to Statements Regarding Levels of Teachers' Sense of Invigoration and Inspiration in Their Work

Figure C3 shows a comparison of the percentage of responses by degree. Each pie chart shows the percentage of responses by influence in one of the five measures.

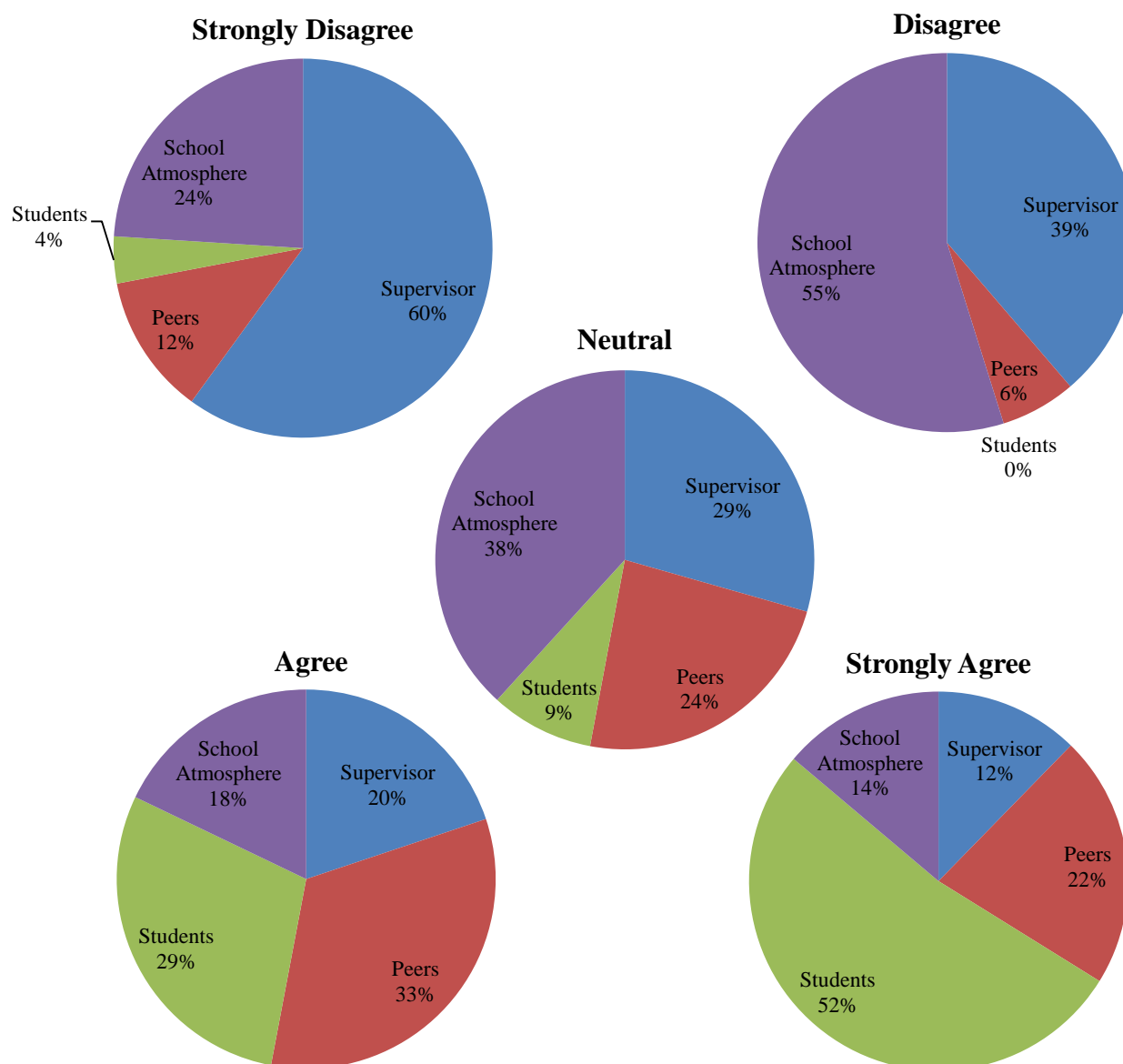


Figure C3. A comparison of teachers' response levels for each influencer distinguished by levels of agreement. Responses to the statement "I am inspired and invigorated in my work," are measured on a scale of 1-5 (1 = Strongly Disagree, 5 = Strongly Agree) with reference to four influencers: supervisor, peers, students, and school atmosphere.

## VITA

### Steven E. Park

#### Education

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#### Presentations and Publications

##### *Written Work*

“Who’s in Charge Here?” – A classroom management resource for Temple University Instructor Training.

“Instruction for Advanced Levels of Cognition and Performance” – A training module for teacher development based on Blooms Revised Taxonomy written for Temple University.

##### *Presentations*

“Immersive Instruction” – A presentation at PACTEC 2013 describing a research-based approach to teaching that involves the whole student and reaches all students.

“Improving Employabilty of CTE Students by Embedding Soft Skills/Employability Skills in the CTE Curriculum” – Presented at the Association of Career and Technical Educators national conference (2014) in Nashville, TN. (Lead researcher and presenter: Steven Park. Collaborators: Jennifer Nicholas and Jane Brooker)