Factors Influencing Teaching Efficacy among Kansas Career and Technical Education Faculty

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FACTORS INFLUENCING TEACHING EFFICACY AMONG KANSAS CAREER AND TECHNICAL EDUCATION FACULTY
FACTORS INFLUENCING TEACHING EFFICACY AMONG
KANSAS CAREER AND TECHNICAL EDUCATION FACULTY

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Education in Workforce Development Education

By

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ABSTRACT

The purpose of this study was to examine the levels of teaching efficacy among postsecondary career and technical education faculty at Kansas technical and community colleges. Postsecondary career and technical education faculty at Kansas technical and community colleges were asked to complete an instrument designed to measure their levels of teaching efficacy based upon a modified version of the Teachers’ Sense of Efficacy Scale, originally developed by Woolfolk and Hoy (1998). The entire population of postsecondary career and technical education faculty from Kansas technical and community colleges (N=726) were surveyed and a total of n=181 (24.9%) completed the instrument. Data gathered through the study was factor analyzed and three types of teaching efficacy were identified among postsecondary career and technical education faculty at Kansas technical and community colleges: classroom management, instructional practices, student engagement. Independent sample t-tests indicated that levels of teaching efficacy in classroom management and student engagement were not significant based upon whether or not the faculty member held a teaching degree. However, a statistically significant difference was found among those faculty who held a teaching degree for their level of instructional practices efficacy (t(179) = 2.116, p=.036). Pearson’s Product Moment Correlation Coefficient analysis indicated no statistically significant relationship between the variables of years of teaching service and years of industry experience when compared to the three types of teaching efficacy (classroom management, instructional practices, and student engagement).
This dissertation is approved for recommendation to the Graduate Council.

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# TABLE OF CONTENTS

CHAPTER ONE. INTRODUCTION

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>History and Purpose of Career and Technical Education</td>
<td>1</td>
</tr>
<tr>
<td>Career and Technical Education Faculty</td>
<td>3</td>
</tr>
<tr>
<td>Teaching Efficacy</td>
<td>5</td>
</tr>
<tr>
<td>Educators Ability to Influence Students</td>
<td>6</td>
</tr>
<tr>
<td>Preparation of Postsecondary Career and Technical Education Faculty</td>
<td>8</td>
</tr>
<tr>
<td>Problem Statement</td>
<td>8</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>9</td>
</tr>
<tr>
<td>Study Design and Research Question</td>
<td>9</td>
</tr>
<tr>
<td>Research Objectives</td>
<td>10</td>
</tr>
<tr>
<td>Study Population and Sample</td>
<td>11</td>
</tr>
<tr>
<td>Study Scope and Delimitations</td>
<td>11</td>
</tr>
<tr>
<td>Definitions of Key Terms</td>
<td>12</td>
</tr>
</tbody>
</table>

CHAPTER TWO. REVIEW OF RELATED LITERATURE

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Cognitive Theory</td>
<td>13</td>
</tr>
<tr>
<td>Social Learning Theory</td>
<td>14</td>
</tr>
<tr>
<td>Experiential Learning</td>
<td>14</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>16</td>
</tr>
<tr>
<td>Teaching Efficacy</td>
<td>20</td>
</tr>
<tr>
<td>Factors Affecting Teaching Efficacy</td>
<td>20</td>
</tr>
<tr>
<td>Characteristics of Faculty with High Teaching Efficacy</td>
<td>21</td>
</tr>
<tr>
<td>Characteristics of Faculty with Low Teaching Efficacy</td>
<td>22</td>
</tr>
</tbody>
</table>
Teaching Efficacy and Teacher Performance ................................................................. 24
Teaching Efficacy and Student Achievement ................................................................. 25
Improving Teaching Efficacy .......................................................................................... 27
Summary .......................................................................................................................... 30

CHAPTER THREE. METHODOLOGY ............................................................................. 33
Research Design .............................................................................................................. 33
Research Variables ......................................................................................................... 33
Selection of Subjects ....................................................................................................... 34
Human Subjects Approval .............................................................................................. 34
Instrumentation .............................................................................................................. 35
Instrument Pilot Testing and Reliability .......................................................................... 36
Data Collection Procedures ............................................................................................ 36
  Data Collection Timeline .............................................................................................. 38
Instrument Factor Analysis ............................................................................................. 39
Data Analysis by Research Objective .............................................................................. 41

CHAPTER FOUR. FINDINGS ......................................................................................... 43
Objective One ................................................................................................................. 43
  Age .............................................................................................................................. 44
  Gender ......................................................................................................................... 44
  Level of Education ...................................................................................................... 44
  Teaching Degree Status .............................................................................................. 46
  Tenure Status ............................................................................................................. 46
  Years of Teaching Service .......................................................................................... 46
B. Modified Teacher’s Sense of Efficacy Scale as Used in the Study ..................... 70
C. Advanced Email Notice sent to all Participants................................................. 73
D. Email Notice sent to all Participants................................................................. 75
E. First Follow-up Email Notice sent to all Participants.......................................... 77
F. Second Follow-up Email Notice sent to all Participants ...................................... 79
G. Approval Letter from Institutional Review Board............................................... 81
VITA .......................................................................................................................... 83
LIST OF TABLES

1. Modifications to the Scale Items of Woolfolk and Hoy Teachers’ Sense of Efficacy Scale ..........................................................35

2. Response Rate by Wave of Kansas Career and Technical Education Faculty ..........38

3. Confirmatory Factor Analysis for Modified Version of Woolfolk and Hoy Teachers’ Sense of Efficacy Scale ..............................................................................40

4. Gender as Reported by Kansas Career and Technical Education Faculty .............44

5. Level of Education as Reported by Kansas Career and Technical Education Faculty ..................................................................................................................45

6. Status of Teaching Degree as Reported by Kansas Career and Technical Education Faculty .....................................................................................................46

7. Tenure Status as Reported by Kansas Career and Technical Education Faculty ........47

8. Relationship between Level of Education and Level of Teaching Efficacy ..........48

9. Comparison of Type of Teaching Efficacy by Teaching Degree Status ...............49

10. Relationship between Length of Teaching Service and Level of Teaching Efficacy .............................................................................................................50

11. Relationship between Length of Industry Experience and Level of Teaching Efficacy ........................................................................................................51
CHAPTER ONE
INTRODUCTION

History and Purpose of Career and Technical Education

The educational system in the United States is comprised of various levels with each level serving a specific purpose. A significant component of the United States educational system is career and technical education at the secondary and postsecondary levels. Career and technical education provides learning experiences that assist students in career exploration and prepare for employment and independent living (Scott & Sarkees-Wircenski, 2008). Through the years career and technical education has been known by several names among educators and the public alike including vocational education, trade and industrial education, technical education and workforce education.

Course content in career and technical education includes curriculum that focuses on “the development of foundational skills, such as basic skills, thinking skills, and personal qualities, as well as a common core of workplace competencies and the specific skill competencies required for each occupational area” (Scott & Sarkees-Wircenski, 2008, p 1). Career and technical education commonly offers occupational programs in a variety of subjects including “agricultural science, accounting, word processing, retailing, fashion, respiratory therapy, child care, carpentry, welding, electronics, and computer programing, to name a few” (Hoachlander, Kaufman, Levesque, & Houser, 2003, p 103).

Career and technical education programs in the United States began in the late 1800s and early 1900s. Early federal legislation supporting the development of career and technical education programs included the Smith-Hughes Act of 1917. The Smith-Hughes Act of 1917 placed career and technical education programs within public school systems under the control
of public educators and school boards (Gray & Herr, 1998). Since the passage of the Smith-Hughes Act of 1917, career and technical education has evolved from its original purpose of preparing high school students for work immediately after graduation to serving adults with varying backgrounds (Scott & Sarkees-Wircenski, 2008).

Although career and technical education programs began in public school systems, they have expanded into postsecondary educational institutions. Career and technical education programs on the postsecondary level is provided by community colleges, private proprietary schools, technical colleges and area vocational-technical schools (Scott & Sarkees-Wircenski, 2008). Postsecondary career and technical education institutions offer a variety of completion options lasting less than two years including associate degree, diploma, and certificate programs in a diverse range of occupational and career areas (Hoachlander, Kaufman, Levesque, & Houser, 2003; Scott & Sarkees-Wircenski, 2008).

Students in postsecondary career and technical education programs are characteristically different than students in secondary career and technical education. These students are typically “older, have family responsibilities, receive financial aid, possess a previous postsecondary degree or certificate, and report higher grade point averages than their academic counterparts” (Scott & Sarkees-Wircenski, 2008, p 35).

Each state has responsibility for determining the structure and providers of career and technical education programs. In the State of Kansas, where this study was conducted, the Kansas Board of Regents (2010a) characterizes career and technical education programs as “comprehensive learner-centered programs that develop academic, technical, and workplace skills either for immediate employment or future career development” (para. 1). These programs exist to prepare a highly skilled workforce to enhance the Kansas economy. Serving under the
Kansas Board of Regents, is the Kansas Postsecondary Technical Education Authority. This 12-member board was established to coordinate improvements in postsecondary career and technical education. The purpose of this board is to “make recommendations to the Regents regarding the coordination, statewide planning and improvements/enhancements to the postsecondary technical education system” (Kansas Board of Regents, 2010b, para. 2).

**Career and Technical Education Faculty**

One key component in effective career and technical education programs is the faculty. As career and technical education programs emphasize skill development to obtain employment, faculty must be subject matter experts in their occupational field. For decades, career and technical education programs have employed specialists from the private sector to serve as faculty (Hoachlander, Kaufman, Levesque, & Houser, 2003). Faculty in career and technical education programs obviously must have practiced the occupational skills that they are to teach (Bartlett, 2002). Occupational experience has been the primary entry point into teaching in a career and technical education program at the postsecondary level (Lynch, 2003). According to Lynch (2003), the occupational experience requirement emanated from the Smith-Hughes Vocational Education Act of 1917 which specifically stated that “instructors teaching federally-funded vocational education programs must have had work experience in the specific occupational area in which they were hired to teach” (p. 42).

While career and technical education faculty are not always required to have a four-year college degree, a majority of career and technical faculty have at least a baccalaureate degree in the field in which they teach as a minimum certification requirement (Scott & Sarkees-Wircenski, 2008). Unlike faculty teaching in elementary, secondary or most higher education programs, faculty in career and technical education programs are frequently hired based upon
previous work experience, most likely industrial and business experience, in their subject area rather than teaching credentials. Industrial and business experience continues to be seen as essential, while knowledge of teaching is seen as only desirable (Olson, Jensrud, & McCann, 2001).

Placing appropriately qualified career and technical education faculty can be a challenge. Specifically, career and technical education administrators at the postsecondary level are challenged to fill faculty vacancies with individuals who are prepared and qualified to deliver career and technical education instruction (Bartlett, 2002). In order for career and technical education program to be successful, the faculty of the programs must be fully competent not only in their subject matter but also in the teaching processes (Miller & Miller, 2003).

One method to assist with professional development of career and technical education faculty lacking teaching credentials is certification issued by state agencies. This is problematic, however, as not all states require certification as an employment requirement for career and technical education faculty. Except in a few states, teacher certification is not required in postsecondary technical institutions. Work experience remains the primary requirement for hiring career and technical education faculty. The fields of trade and industrial, technical, and health occupations education have traditionally had to utilize an alternative certification system that acknowledges years of occupational experience as a valued teacher preparation requirement (Scott & Sarkees-Wircenski, 2008).

State agencies impose few directives on the teacher qualifications needed beyond field expertise to instruct in career and technical education programs (Olson, Jensrud, & McCann, 2001). States that do have certification programs have varying requirements. There is not a universal set of procedures used for licensure or certification of all postsecondary career and
technical education teachers, as procedures differ widely from state to state (Bartlett, 2002). Many states have enacted policies enabling skilled workers to be employed and credentialed as career and technical education teachers without the educational requirements required of most teachers (Hoachlander, Kaufman, Levesque, & Houser, 2003). In states where teacher certification is available, the certification process varies greatly, and can be obtained in a number of different ways. Several types of certificates are available, including: initial/probationary, regular/permanent, emergency, private school, and alternative (McCaslin & Parks, 2002).

Despite the fact that the United States educational system has a well-documented history of supporting career and technical education program, many issues remain regarding the qualifications and credentialing of faculty for these programs. As noted, career and technical education programs have different standards for identifying and placing qualified teachers. What remains unknown is to how these educators, whose credentials are often vetted through business and industrial experience, are prepared to fulfill their teaching roles. Less is known about their perceptions of their capabilities as educators.

**Teaching Efficacy**

Teaching efficacy is the teacher’s belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998). While teachers’ ability to teach impacts their performance, their beliefs about their abilities and about the abilities of their students also impact teacher performance. Teachers differ in the extent to which they believe that teaching can have an effect on student performance, despite external obstacles such as family background and student ability (Ashton & Webb, 1986).
Ashton (1984) identified eight characteristics that distinguished faculty with high levels of teaching efficacy from faculty with low teaching efficacy. Those eight characteristics are:

- Sense of personal accomplishment,
- Positive expectations for student behavior and achievement,
- Personal responsibility for student learning,
- Strategies for achieving objectives,
- Positive affect,
- Sense of control,
- Sense of common student-teacher goals, and
- Democratic decision-making ability.

Teaching efficacy will be determined, in part, by the individual’s comparative judgment of the degree to which his or her current abilities and strategies are adequate for the teaching task in question. Both self-perception of teaching competence, including an assessment of internal resources and constraints, and the beliefs about the task requirements in a particular teaching situation, including as assessment of resources and constraints external to the teacher, contribute to one’s teaching efficacy and the consequences that stem from efficacy beliefs (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998). The level of teaching efficacy can indicate the level of commitment faculty have towards their career in teaching. Teaching efficacy has also been determined to be a strong predictor of commitment to teaching (Coladarci, 1992).

**Educators Ability to Influence Students**

Properly prepared and qualified career and technical education faculty, like any other faculty, are needed to educate and train students to be productive in many of the careers that are showing growth trends for the future (Bartlett, 2002). In addition to directly influencing student
learning through instructional activities, faculty can indirectly influence student learning through other means. Faculty can influence student learning through their attitude, teacher-student relationships, and professional competency. Personal characteristics and behaviors of faculty affect both faculty performance and student performance (Miller & Miller, 2002).

Beliefs about students will have a great influence on how faculty teach. Every faculty member formulates an image in their mind about what students are like - their dispositions, skills, motivation levels, and expectations. What faculty believe students are like is based on their unique life experiences, particularly their observations of young people and their knowledge of human growth and development (Parkay & Stanford, 2010). There is not one type of student as students have “different personalities, expectations, interests, needs and ability levels” (Miller & Miller, 2005, p. 3). Just as there is no one type of student, there is not one type of instructional method. In order to best serve, differing types of students to ensure all students are learning, faculty must utilize a variety of teaching styles and instructional strategies in an effort to accommodate each student’s “knowledge and ability level, socioeconomic background, needs, interests, and motivation” (Miller & Miller, 2005, p. 87). Faculty must be flexible in course delivery and student outcomes to reach all students.

Further, beliefs about students - whether positive or negative - will influence the relationship between the faculty and the students. Negative views of students may promote teacher-student relationships based on fear and coercion rather than on trust and helpfulness. Extreme positive views may risk not providing students with sufficient structure and direction and not sufficiently communicating high expectations. In regard to beliefs about students, it is important that teachers convey positive attitudes towards their students and a belief that they can learn (Parkay & Stanford, 2010).
Preparation of Postsecondary Career and Technical Education Faculty

In many instances faculty in postsecondary career and technical education programs have little to no background in educational theory and methods. As such, faculty may be unprepared for their roles as educators. Preparing faculty in career and technical education programs is important to ensure teacher performance and student achievement. Adapting to the learning environment in career and technical education programs is critical. Faculty need to be knowledgeable about the differences among learners and likewise be willing to experiment and continuously study and examine their teaching.

Faculty must be willing to identify their weaknesses and engage in professional development to address these weaknesses. An ongoing professional responsibility of workforce educators is to work to improve their own teaching effectiveness and help colleagues do likewise (Gray & Herr, 1998). New faculty will not only need to be knowledgeable about their discipline and the postsecondary institution’s philosophy, they will also be dedicated facilitators of learning and eager learners themselves (Murray, 1999). Postsecondary career and technical education faculty need to be aware of their abilities as educators. An understanding of one’s efficacy level as a teacher can assist in creating awareness about one’s abilities.

Problem Statement

Technical skill and subject knowledge are important competencies that postsecondary career and technical education faculty should possess but these alone may not lead to effective instruction in the classroom (Miller & Miller, 2002). It is plausible that a faculty member’s level of teaching efficacy can affect their teaching performance. Research in teaching efficacy as it applies to postsecondary career and technical education faculty is limited. It is unknown what
influences postsecondary career and technical education faculty members’ level of teacher efficacy and to what degree their level of teaching efficacy affects teaching performance.

**Significance of the Study**

Research regarding postsecondary career and technical education faculty member’s level of teaching efficacy is needed to examine what influences teacher performance beyond the teacher’s technical skill and content knowledge. This study will examine independent variables in relation to the dependent variable, teaching efficacy, in an attempt to understand the impact on both postsecondary career and technical education faculty members’ teaching efficacy and their classroom performance.

Identification and to some degree an understanding of how these independent variables interact with teaching efficacy can assist in improving the quality of instruction in postsecondary career and technical education programs. Producing high quality career and technical teachers that are knowledgeable of their content and pedagogy is a way that career and technical education programs can equip students with high levels of technical and academic skills (McCaslin & Parks, 2002).

**Study Design and Research Question**

This descriptive correlational study examined factors that influence teaching efficacy among full-time career and technical education faculty at Kansas technical and community colleges. The following research question guided this study of teaching efficacy among career and technical education faculty at Kansas technical and community colleges: How is teaching efficacy impacted by attributes of career and technical education faculty including educational credentials, teaching experience, and industrial experience?
Research Objectives

The following research objectives guided this study of teaching efficacy among career and technical education faculty at Kansas technical and community colleges.

**Objective One:** Describe career and technical education faculty at Kansas technical and community colleges on the following demographic variables:

- Age,
- Gender,
- Level of education,
- Teaching degree status,
- Tenure Status,
- Years of teaching service, and
- Years of industrial experience.

**Objective Two:** Describe the types of teaching efficacy among career and technical education faculty at Kansas technical and community colleges by their level of education.

**Objective Three:** Examine the relationship between teaching degree status and level of teaching efficacy of career and technical education faculty at Kansas technical and community colleges.

**Objective Four:** Examine the relationship between length of teaching service and level of teaching efficacy of career and technical education faculty at Kansas technical and community colleges.

**Objective Five:** Examine the relationship between length of industry service and level of teaching efficacy of career and technical education faculty at Kansas technical and community colleges.
Study Population and Sample

The population for this study was career and technical education faculty at Kansas technical and community colleges. Data from the Kansas Board of Regents (2010) indicated that there were a total of 532 career and technical education programs at Kansas technical and community colleges during the 2010-2011 academic year. Directory information from college catalogs and websites indicated a total of N=726 full-time career and technical education faculty within those programs. All full-time career and technical education faculty were asked to participate in this study. Adjunct faculty employed fulltime at Kansas technical and community colleges did not participate in this study.

Study Scope and Delimitations

As previously noted, career and technical education programs have a well-established history in the United States at the secondary and postsecondary level. These programs do differ from other areas of education in their scope and purpose, as do the methods for credentialing qualified faculty to staff these programs. Postsecondary career and technical education faculty have little to no background in educational theory and methods and their involvement in professional development activities often varies.

The primary dependent variable of this study, teaching efficacy, has almost been exclusively researched at the K-12 level. A void exists in the existing literature regarding the construct of teaching efficacy as it applies to postsecondary education, especially among career and technical education program faculty. As stated, it is unknown what influences postsecondary career and technical education faculty members’ level of teaching efficacy and to what degree their level of teaching efficacy affects teaching performance.
This study represents a unique opportunity to further explore the construct of teaching efficacy among postsecondary career and technical education faculty. This group of professional educators is often charged with delivering quality instruction that prepares learners for placement in various business and industrial careers, many of which are often deemed high demand career areas.

**Definitions of Key Terms**

For the purpose of this study, the following definitions were used:

- **Full-time Faculty** - Educators whose primary role is classroom instruction.
- **Career and Technical Education program** - a comprehensive learner-centered program that develops academic, technical, and workplace skills either for immediate employment or future career development (Kansas Board of Regents, 2010a)
- **Self-Efficacy** – a belief in one’s ability to perform a task
- **Teaching Efficacy** – the extent to which teachers believe their efforts will have a positive effect on student achievement (Newman, Rutter & Smith, 1989)
CHAPTER TWO

REVIEW OF LITERATURE

Student learning is based upon many internal and external factors of the student. Internal factors include the cognitive thought processes of the student and the belief systems of the student. External factors include social and experiential learning opportunities surrounding the student. Faculty can influence both internal and external factors.

Social Cognitive Theory

Albert Bandura described human behavior and its effects on human performance as part of the Social Cognitive Theory. In social cognitive theory, Bandura (1995) indicated, “people must develop skills in regulating the motivational, affective, and social determinants of their intellectual functioning as well as the cognitive aspects” (p. 18). Sheehy (2004) described Bandura’s social cognitive theory as one that “considers the person as an active agent using cognitive processes such as memory and problem-solving to reflect on experiences of the world and to make decisions and plan behavior” (p. 29). People strive to exercise control over events that affect their lives. The striving for control over life circumstances permeates almost everything people do because it can secure them innumerable personal and social benefits. According to Sheehy (2004) “social cognitive theory sees the adaptively functioning person as a well-tuned organism capable of adapting the environment and of changing parts of the environment to suit themselves” (p. 29). People’s level of motivation, affective states and actions are based more on what they believe than on what is objectively the case (Bandura, 1995). Successful completion of an activity is based not only on one’s ability to perform an activity but also on one’s beliefs.
Social Learning Theory

Students at all levels of education can be influenced by the actions of others in the learning environment. Children and adults develop skills, attitudes, and values through social learning processes (Elias, Zins, Weissberg, Greenberg, Haynes, Kessler, Schwab-Stone, & Shriver, 1997). Albert Bandura described the influence of actions by others in the learning environment as the Social Learning Theory. Bandura (1997) characterized social learning as occurring “either deliberately or inadvertently by observing the actual behavior of others and the consequences” (p. 440). Faculty serve as a role model to their students through their actions. Faculty that teach by example, whether intentionally or not, model behavior that is a powerful influence on student learning (Elias, et.al, 1997). Students observe the moods, attitudes, and behaviors of faculty and frequently base their moods, attitudes, and behaviors to reflect those of the faculty. The moods, attitudes, and behaviors of the students can impact their learning. Bandura (1977b) indicated that modeling can “produce learning principally through their informative function” (p. 22)

Experiential Learning

One of the seminal educational philosophers of the early 1900’s was John Dewey. One of Dewey’s theories was that vocational education was an important topic of study for all students, not just for those who might end up in the workforce. In his view, social efficiency meant giving all youth a broad education in the vocations so that they might better serve as agents of democratic change to make industrialization more responsive to all. In training individuals to be agents of change, faculty that can provide effective learning experiences are critical. Industrialists had been successful in ensuring that particularly trade and industrial education teachers were required to have extensive work experience instead of formal college
teacher preparation (Gray & Herr, 1998). Dewey (1988b) coincided with this view regarding the teaching process:

I would not say that a teacher ought to strive to be a high-class scholar in all the subjects he or she has to teach. But I would say that a teacher ought to have an unusual love and aptitude in some one subject: history, mathematics, literature, science, a fine art or whatever. The teacher will then have the feel for genuine information and insight in all subjects; will not sink down to the level of the conventional and perfunctory teacher who merely “hears” recitations, and will communicate by unconscious contagion love of learning to others. (p. 345)

Another of Dewey’s theories emphasizes the importance of experience in the learning process. In Dewey’s system, experience is always the starting point of an educational process; it is never the result (Knowles, 2005). Career and technical education faculty must be able to provide effective experiences for the students. Dewey (1988a) commented on experience:

The effect of an experience is not borne on its face. It sets a problem to the educator. It is his business to arrange for the kind of experiences which, while they do not repel the student, but rather engage his activities are, nevertheless, more than immediately enjoyable since they promote having desirable experiences. (p. 13)

Kolb (1984) described a model in which experiential learning is an important part of a learning environment. Experiential learning theory, as written in Kolb (1984), provides “the foundation for an approach to education and learning as a lifelong process that is soundly based in intellectual traditions of social psychology, philosophy, and cognitive psychology” (pp. 3-4). Learning in a workplace environment can enhance traditional classroom methods and provide additional personal and technical skill development for career and technical education students. The experiential learning model emphasizes that learning and change are the result of the integration of emotional experiences with cognitive processes (Kolb & Fry, 1975).

Kolb (1984) described theories relating to the role of faculty in the learning process and to the role of experience in the learning process. He characterized the role of the educator as to
not only implant new ideas but also to dispose of or modify old ones. In this role, educators must be able to change or modify existing beliefs of the students. Career and technical education faculty having strong work experiences provides them a background from which to draw to develop experiences to enhance student learning. Kolb (1984) characterized experience as it relates to learning as “the process whereby knowledge is created through the transformation of experience” (p. 38).

**Self-Efficacy**

When facing performance of any task, individuals must have not only the ability to perform the task but they must also have belief in themselves that they will be able to perform the task. When performing a task, there are three obstacles an individual must overcome. These obstacles include getting started on the task, the effort in performing the task, and the effort to continue the task regardless of obstacles to completing the task. Efficacy beliefs influence how people think, feel, motivate themselves, and act (Bandura, 1995). Sheehy (2004) stated that Bandura regarded self-efficacy as “the foundation of human motivation, well-being, and personal accomplishment” (p. 29). Perceptions of self-efficacy affect whether a task will be initiated, how much effort will be expended, and whether the task will be continued in the face of obstacles (Starko & Schack, 2010).

Levels of self-efficacy can be influenced by several factors. Bandura (1977b) stated that expectations of self-efficacy are based on four major sources of information including Performance Accomplishments, Vicarious Experience, Verbal Persuasion, and Emotional Arousal.

Self-efficacy is affected through performance accomplishments. As individuals achieve successes in accomplishing tasks, their expectations of success in future endeavors are raised. In
similar fashion, as individuals sense failure in accomplishing tasks, their expectations of future success is lowered. The earlier in a course of events failures occur, the larger the impact on levels of self-efficacy. As higher levels of self-efficacy are developed through repeated success, any negative impact of occasional failures is likely to be limited (Bandura, 1977b). Schultz and Schultz (2009) indicated, “previous success experiences provide direct indications of our level of mastery and competence (p. 410).

The actions of others provide vicarious experience that influence levels of self-efficacy. Regarding vicarious experiences, Bandura (1977b) stated, “seeing others perform activities without adverse consequences can generate expectations in observers that they too will improve if they intensify and persist in their efforts” (p. 81). When individuals see other successfully performing tasks and are positively rewarded for their efforts, the individuals witnessing the others are more likely to engage in performing that task. Effective models influence feelings of adequacy and competence. Models show appropriate strategies for dealing with difficult situations (Schultz & Schultz, 2009).

Verbal persuasion also influences levels of self-efficacy. Through suggestion, people can believe they are able to be successful in performing tasks in which they have been unsuccessful in the past (Bandura, 1977b). Positive encouragement builds self-efficacy. Schultz and Schultz (2009) stated, “verbal persuasion, which means reminding people that they possess the ability to achieve whatever they want to achieve, can enhance self-efficacy” (p. 411). If individuals not only believe that they can perform a task, but also have verbal reinforcement indicating they can perform a task, their level of self-efficacy is much greater than when they rely solely on their beliefs.
Self-efficacy levels are influenced by the emotional investment of those performing tasks. Emotional arousal occurs when individuals feel stressed regarding their performance. Bandura (1977a) described this effect as “stressful and taxing situations generally elicit emotional arousal that, depending on the circumstances, might have informative value concerning personal competency” (p. 182). Information of how individuals feel can be as a basis for judging our ability to cope (Schultz & Schultz, 2009). As individuals are required to perform under stressful situations, their level of self-efficacy tends to decline. Individuals are more likely to believe problems can be successfully mastered when they are not affected by stressful situations (Schultz & Schultz, 2009). Under normal circumstances, when individuals are not under the forces of outside stresses, they feel calmer and more confident of their abilities.

Efficacy beliefs enhance or limit motivation by influencing the types of goals that individuals set for themselves, the extent of effort they expend, and their persistence in face of difficulties (Gredler, 2009). Individuals can acknowledge that a course of action will produce certain outcomes, but when faced with serious doubts about their abilities to perform the action, their behaviors will be influenced by their doubts (Poulou, 2007). While belief in one’s ability to complete a task is important, uncertainty can be a motivating factor for individuals to seek assistance in completing the task. In preparing for challenging endeavors, some self-doubt about one’s performance efficacy provides incentives to acquire the knowledge and skills needed to master the challenges. Even facing uncertainty, individuals must step outside of their comfort zone and be willing to work to achieve completion of a task. Pajares stated that individuals with low levels self-efficacy might believe “things are tougher than they really are, a belief that fosters stress, depression, and a narrow vision of how best to solve a problem” (pp. 544-545). During difficult tasks, individuals have to invest a great deal of time and effort and have to be
willing to take risks under uncertainty. During the performance of a task, individuals must find the strength to focus and continue forward even if positive results are not readily achieved. High self-efficacy contributes to the creation of a positive psychological environment that enables people to manage difficult situations (Gredler, 2009). The result of high levels self-efficacy can include feelings of serenity when facing difficult tasks and activities (Pajares, 1996).

Negative issues faced with performance of a task must be faced and overcome in order to complete the task. A sense of efficacy assists in controlling disturbing thoughts and supports coping behaviors in difficult situations (Gredler, 2009). In managing challenges in performance situations, people need a resilient sense of efficacy that their efforts in spite of setbacks or failure will produce desired results. Resiliency in performing a task provides the necessary staying power in the pursuit of innovation and excellence (Bandura & Locke, 2003). A low sense of efficacy contributes to a slackening of effort and the tendency to give up easily (Gredler, 2009).

Completion of a task leads to increased levels of confidence. When faced with performing the same task, successful prior completion of the task increases individuals’ beliefs that they can successfully complete the task again. Successful completion of a task provides individuals with even higher self-efficacy and an increased likelihood of repeating the task (Starko & Schack, 2010). Successes increase efficacy levels, whereas failures lower levels, especially if failures occur early (Poulou, 2007). Failure to accomplish a task may lead to lowered beliefs about future abilities to accomplish a task. Gresham (2009) found that “the recognition that one’s performance is a failure leads to lowered efficacy beliefs, which contribute to the expectation that one’s future performance will be inept” (p. 23). Knowledge, skill, and prior performance are poor predictors of future performance as the beliefs that individuals hold
about their abilities and about the outcome of their efforts influence how they will behave (Pajares, 1996).

**Teaching Efficacy**

Teaching efficacy is the teacher’s belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998). Teacher efficacy is affected by many factors. Likewise, there are characteristics of teachers with high levels and low levels of teacher efficacy. Teacher efficacy also affects teaching performance and student achievement.

**Factors Affecting Teaching Efficacy**

Teaching efficacy centers around the confidence faculty have in their abilities to affect student learning in their role as educators. Yost (2002) stated that faculty who “believe in themselves and their abilities to teach also believe in their students’ abilities to learn” (p.197). Faculty lacking confidence are likely to struggle in their efforts. Ashton (1984) indicated a major influence on teaching efficacy is the uncertainty faculty feel about whether or not they have an effect on student learning. The confidence level of faculty may vary based upon differing factors faced by the teachers. Faculty may feel confident about their abilities to motivate certain behaviors in some students while feeling less competent with others (Ashton, 1984). Faculty need to see evidence of increased student learning before new, higher-efficacy beliefs will take root (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998).

In addition to their confidence in affecting student learning, teaching efficacy is also influenced by other factors. Teaching efficacy is often dependent upon the comfort level of the content, grade level of the students or specific topic being taught (Bitto & Butler, 2010). Faculty in environments in which they feel comfortable are more likely to exhibit a higher degree of
teaching efficacy. The highest comfort level of faculty is when they are teaching specific subjects to specific students in specific teaching contexts and as such their comfort level with increase or decrease under differing conditions (Poulou, 2007).

High-efficacy teachers don’t blame lack of student learning on lack of intelligence, poor home environments, uncooperative administrators, or some other external cause. Instead they increase their teaching efforts in attempt to increase student learning. (Kauchak & Eggen, 2005). Students are less likely to invest in an educational program if they do not believe the faulty are personally interested and emotionally invested in student learning (Collier, 2005).

**Characteristics of Faculty with High Teaching Efficacy**

Faculty with high teaching efficacy create learning environments conducive to student learning. These faculty tend to provide a quality learning environment for their students (Yost, 2002). The learning environment surrounding students creates an atmosphere that impacts student learning. The atmosphere in the classroom can result from the attitude of the faculty. A positive atmosphere in the classroom that contributes to student interest and motivation can result from a positive attitude in the faculty. Faculty with a positive attitude towards teaching and student learning will have a positive impact on students as the positive attitude sends a reinforcing message to the student (Miller & Miller, 2003).

High teaching efficacy enables faculty to persist through obstacles, increasing the likelihood of success. (Ross, Cousins, Gadalla, & Hannay, 1999). Faculty with a high level of teaching efficacy exhibit a higher degree of interaction with students within their classrooms. This higher level of interaction enables a greater connection between the faculty and the students in the classroom. High-efficacy faculty maintained more positive, accepting relationships with students and were more open to accept students’ suggestions and ideas (Ashton, 1984).
Faculty with high levels of teaching efficacy manage their classrooms in a manner that encourages student performance in the classroom. They create classroom climates in which students feel safe and free to express their thinking without fear of embarrassment or ridicule. They emphasize praise rather than criticism, persevere with low achievers, and maximize the time available from instruction. (Kauchak & Eggen, 2005). High-efficacy faculty were observed to redirect students who were working independently, answer questions of students who came up to the small group, and in general achieved more student on-task behavior in the entire class while they were instructing small groups (Gibson & Dembo, 1984).

Increasing levels of teaching efficacy can lead to even higher levels of teaching efficacy.Achieving success has a tendency to drive individuals towards achieving more success. Classroom success contributes to higher teacher efficacy in an upward spiral (Ross, Cousins, Gadalla, & Hannay, 1999). As faculty continue increasing their level of teacher efficacy, they improve their level of performance. Greater efficacy leads to greater effort and persistence, which leads to better performance, which in turn leads to greater efficacy (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998).

**Characteristics of Faculty with Low Teaching Efficacy**

Faculty with low teaching efficacy believe some students cannot or will not learn in school and that there is nothing any teacher can do to alter this unhappy reality (Ashton & Webb, 1986). Ashton & Webb (1986) further indicated that if levels of teaching efficacy is low because faulty believe students cannot learn changing their expectations requires evidence that their actions can positively affect the performance of low-achieving students (p. 6). In addition, Ashton & Webb (1986) found that if low levels of teaching efficacy are based on the belief that
faculty lack teaching skills to teach low-achieving students, levels of teaching efficacy will be altered only if faculty learn teaching skills that make a difference in student learning (p. 6).

Faculty with low levels of teaching efficacy exhibits poor performance in the classroom. Lack of belief in either themselves as educators or in issues surrounding their students can lead faculty to not give their best efforts in the classroom. Low teaching efficacy leads to less effort and giving up easily, which leads to poor teaching outcomes, which tends to produce decreased efficacy (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998). Faculty who project negative attitudes in their classrooms have a significant impact on the learning environment, affecting student learning and student attitudes (Miller & Miller, 2003). Miller & Miller (2005) indicated when faculty are not supported and encouraged, students may “learn less, develop indifferent attitudes, doubt their self-worth, become frustrated, or leave the instructional program” (p. 6).

Classroom management can create issues for faculty with low levels of teaching efficacy not shared by faculty with high levels of teaching efficacy. Low-efficacy teachers were observed to appear flustered if there was any interruption of their routine while engaged with small groups, whereas the high-efficacy faculty seemed to utilize this format with more ease and flexibility (Gibson & Dembo, 1984).

Faculty with low levels of teaching efficacy may not utilize classroom instructional methods that provide the best learning environment for students within the classroom. Faculty with low teaching efficacy tend to lecture and use traditional methods while those with high teaching efficacy often group students together and allow students to explore and guide their own learning. They tend to use more familiar traditional methods requiring less effort rather than experimenting with newer, less familiar methods. Faculty with a lower sense of self-efficacy are more likely to refrain from using innovative or exploratory instructional practices (Bitto &
Butler, 2010). By not attempting new methods, students that do not function well in a traditional classroom environment may not be reached. Faculty must attempt to find and utilize a variety of teaching methods to enhance the learning environment of all students within their classroom.

Career and technical education faculty are hired as subject matter experts in their field of work. They are hired in a specific role within a school environment. Moving faculty into roles outside of their normal teaching area may have negative impact on their teaching efficacy. Teaching efficacy is threatened when faculty move away from their home departments, either by teaching a course outside their subject or by facilitating curriculum activities that cross departmental lines. Continuing to work outside of their primary subject area could lead to even further declines in teaching efficacy. Teaching outside one’s subject has a negative effect on teaching efficacy that suggests a downward spiral could ensue from such assignments (Ross, Cousins, Gadalla, & Hannay, 1999).

**Teaching Efficacy and Teacher Performance**

Instructional styles and delivery methods vary among faculty. Each faculty member will develop an instructional style and delivery method for instruction. Teaching efficacy level of the faculty affects the abilities of the faculty to implement new instructional styles and delivery methods and affects the learning environment for the student. Faculty with higher teaching efficacy are more willing to implement teaching strategies that stretch their abilities. (Ross, Cousins, Gadalla, & Hannay, 1999). Faculty implementation of effective instructional practices is impacted by the level of teaching efficacy and therefore important to the success of faculty and students (Bitto & Butler, 2010). Faculty choices of classroom management and instructional strategies are influenced by their self-perception of their personal teaching abilities (Ashton & Webb, 1986).
Communication is an important skill for any faculty member. Course and curriculum expectations must be effectively communicated to each student. Faculty should establish early in the curriculum their expectations for the students, setting high goals and standards for student learning. Through communicating expectations and having a high teaching efficacy exhibiting confidence in their abilities, faculty are less likely to criticize students in the classroom. Faculty who expect students to learn and who have confidence in their ability to teach communicate higher expectations by providing less criticism to students (Gibson & Dembo, 1984).

In their research, Gibson and Dembo (1984) also indicated differences in questioning techniques and in instructional techniques of high-efficacy faculty compared to low efficacy faculty. High-efficacy faculty persisted questioning students until obtaining correct responses rather than quickly questioning another student or asking another question. High-efficacy faculty may achieve higher student engagement rates by utilizing whole class instruction and may be better able than low-efficacy faculty to keep other students engaged while instructing small groups (Gibson & Dembo, 1984). Student engagement is vital in maintaining a positive learning environment.

**Teaching Efficacy and Student Achievement**

Teaching efficacy can have an effect on the student within the learning environment as well as on the student outside of the learning environment. Much of the instructor’s impact on learning is a result of behavior, both word and deed (Miller & Miller, 2002). Within the learning environment, teaching efficacy can affect not only student performance in learning the curriculum, but also students’ attitude towards the curriculum. Efficacy levels of the faulty can be influenced by student achievement, attitude, and affective growth (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998).
Students will have a tendency to mirror the efficacy level of the faculty. Instructors who believe in the importance of their work are well prepared and devoted to the student’s best interests. These instructors have a positive attitude that shows, and students tend to respond in the same way. (Miller & Miller, 2002). Faculty exhibiting a high level of teaching efficacy leads to a high level of student interaction. Ashton (1984) found that students were more enthusiastic and spontaneous in classroom interaction with high efficacy faculty.

Teaching efficacy plays a larger role in student development beyond the learning of the curriculum. In addition to affecting students’ ability to learn curriculum, teacher efficacy affects student attitudes outside of the curriculum. Beyond student achievement, teaching efficacy also plays a role in shaping students’ attitudes toward school, the subject matter being taught, and even the faculty (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998).

In a study on the effect of teaching efficacy levels on students in a math classroom, Midgley, Feldlaufer, and Eccles (1989) found that students with more efficacious faculty had higher expectancies and perceptions of their performance in math than did students with less efficacious faculty. Being in a learning environment guided by faculty with a higher level of teaching efficacy lead to a change in the students’ perspective of the curriculum and their ability to perform the work. In addition, this study found that students with more efficacious faculty rated math as less difficult than did students with less efficacious faculty.

While the effect of a learning environment led by a faculty with a higher level of teaching efficacy led to immediate changes in the learning environment, this type of learning environment also had long-term implications for future student achievement. Generally, the beliefs of students who had low-efficacy faculty became more negative as the school years progressed, whereas the beliefs of students who had high-efficacy faculty became more positive or showed
less negative change from the beginning to the end of the school year (Midgley, Feldlaufer, & Eccles, 1989).

**Improving Teaching Efficacy**

Increasing levels of teaching efficacy leads to changes in teaching performance. Faculty with high levels of teaching efficacy are more likely to adapt in their classroom environment to meet the needs of their students. Faculty with a greater sense of efficacy more readily implemented new curriculum and avoided the grumbling and foot dragging that often accompanies change (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998). Change can be difficult but is necessary for improvement. To encourage change to new teaching strategies, schools should look at improving levels of teaching efficacy. If schools wish to increase faculties’ use of differentiated strategies, it may be important to consider enhancing teaching efficacy rather than concentrating efforts on convincing them that particular activities meet the needs of bright students (Starko & Schack, 2010).

Changes in classroom strategies that are successful positively influence levels of teaching efficacy. Faculty who successfully implemented new teaching strategies exhibited marked gains in teaching efficacy, whereas faculty who learned new strategies but were unsuccessful implementing it saw a decline in level of teaching efficacy (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998). Faculty are enabled to move theory into practice when instructed in a content area, while being facilitated and supported in new practices (Shidler, 2009).

Self-awareness of their abilities to influence student learning can benefit faculty. Faculty with a sense of awareness of deficits in their abilities in certain circumstances but have a belief about how those deficits can be addressed will have a resilient sense of teaching efficacy.
(Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998). Resiliency in teaching efficacy is important to maintaining an effective learning environment.

Addressing teaching efficacy concerns in the beginning stages of in the career of faculty can have long-term positive effects. Helping faculty develop strong efficacy beliefs early in their careers will pay lasting dividends. The development of a strong sense of efficacy can pay dividends of higher motivation, greater efforts, persistence, and resilience across the span of a teaching career (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998). Beginning teachers who perceived high degrees of collaboration among teachers and administrators reported substantially higher values of self-efficacy beliefs than those with little opportunity for collaboration with other adults (Chester & Beaudin, 1996).

High levels of teaching efficacy can lead to increased commitment from faculty. A greater commitment to teaching would be expected among teachers who believe student achievement can be influenced through skillful instruction, who have confidence in their own ability to influence student achievement, and who assume personal responsibility for the level of student achievement they witness in their classroom (Coladarci, 1992). Faculty increasing their beliefs in their abilities and their beliefs that their efforts impact student learning are more likely to become more satisfied in their role as educators. Improving levels of teaching efficacy could improve levels of job satisfaction (Vel-Ruma, et. al., 2010).

Schools can improve teaching efficacy through professional development activities. Vel-Ruma (2010) indicated methods for raising teaching efficacy levels included professional development opportunities and strong induction programs. Given proper training, teachers can improve their abilities. Faculty need a thorough understanding of the complexity of task requirements and assistance in breaking these down to allow them to focus on and improve their
skills (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998). Allowing faculty time and training needed to develop skills is critical in developing a higher sense of teaching efficacy. When the complex task of teaching is broken down into its elements and faculty are allowed to work on developing one set of skills at a time, a compounding sense of efficacy over various contexts and skills should occur (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998). Professional development activities to improve teaching efficacy levels among faculty encourage implementation of innovative practices (Yost, 2002).

While teaching efficacy levels may begin high, there can be a lowering of teaching efficacy as new teaching strategies are utilized. Professional development can assist faculty through difficulties in using new strategies. Faculty need support and training to see them through the initial slump in efficacy beliefs as they attempt to implement new methods (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998). One area of professional development that may lead to increased teaching efficacy is additional training in behavior management. Egyed and Short (2006) found increasing behavior management skills may boost confidence in teaching ability by reinforcing existing skills and competencies.

In addition to professional development, personal reflection and feedback from other faculty can be beneficial in increasing teaching efficacy. When faculty reflect on their teaching experiences, they can attribute their success or failure to factors outside of themselves, or they can assess the personal factors they brought to the task. Schools that offer opportunities for teachers to reflect on teaching and learning with their colleagues and for administrators and teachers to collaborate and communicate, as well as support the use of instructional resources, foster more positive changes in self-efficacy beliefs of both novice and experienced newly hired teachers than schools where such opportunities are limited (Chester & Beaudin, 1996).
Interaction among faculty during implementation of new teaching strategies can improve skills and confidence. Schools can influence teachers’ feelings of efficacy and empowerment, however, when they provide opportunities for collegial interaction, when supervisors attend to the instructional dimension of teacher’s roles, and when consideration is given to how resources are allocated (Chester & Beaudin, 1996). During the implementation of a change, giving faculty opportunities to engage in role playing and microteaching experiences with specific feedback can have a powerful impact on self-perceptions of teaching abilities, because such exercises more directly address the need for mastery experiences. Positive effects of vicarious experiences and verbal persuasions are likely pronounced, as fellow faculty can provide compelling models and credible sources of feedback (Tschannen-Moran, Woolfolk-Hoy & Hoy, 1998).

Mentoring as part of a professional development plan can have a direct effect on teaching efficacy (Yost, 2002). In addition to mentoring programs benefiting faculty being mentored, mentoring programs can also benefit the faculty serving as mentors. Faculty that participated in the mentoring program indicated they became more aware of their own teaching styles and of the responsibilities to their students (Yost, 2002). Yost (2002) further indicated that faculty chosen to serve as mentors re-affirmed their competence as teachers simply by being chosen as a mentor.

Summary

Bandura provided much insight into learning development through his work in the Social Cognitive Theory and in the Social Learning Theory. Social Cognitive Theory examines the cognitive aspect of thinking. People’s beliefs impact their abilities to perform actions.
Social Learning Theory considers how people learning in a social environment. Learning is influenced not only by the task at hand but also by the influence of those around us. The learning environment plays a significant role in the development of the student.

Bandura also provided much study in Self-Efficacy and its impact on human performance. Pajares (1996) found that “efficacy beliefs help determine how much effort people will expend on an activity, how long they will persevere when confronting obstacles, and how resilient they will prove in the face of adverse situations—the higher the sense of efficacy, the greater the effort, persistence, and resilience” (p. 544). When efficacy levels are low, people avoid situations when they doubt their abilities will lead to success (Ashton & Webb, 1986).

Career and technical education programs are based largely student learning in areas of cognitive skills and psychomotor skills. Experiential learning opportunities provide co-curricular activities to support classroom learning. Career and technical education faculty, through their background of work experience, can provide a model for experiential learning for their students.

Career and technical education faculty are hired as subject matter experts and many also possess professional training in education. There is more, however, to becoming an effective faculty member than prior work experience and teaching experience. Faculty and student performance is influence by the characteristics and behaviors of the faculty (Miller & Miller, 2003). Many of these characteristics and behaviors are influenced by the efficacy beliefs of the faculty.

The construct of Teaching Efficacy examines the belief values of faculty and their impact on teacher performance and student learning. While the abilities of the faculty are important,
belief in their abilities as faculty as well as belief in their student’s abilities to learn is crucial in their performance and in building a learning environment for their students.

Effective faculty are those who can facilitate change in the behaviors of their students (Miller & Miller, 2005). Faculty who believe in their abilities and the abilities of their students will be better agents of change.

Student achievement can reflect the environment in which they learn. Environments that are positive and challenging provide greater opportunities for learning than environments that are negative and uncaring. Students sense the verbal and non-verbal cues from faculty and perform based on those cues.

People who generally understand teaching realize that it entails considerably more than having knowledge of subject matter and pedagogy and being gifted. It includes a set of understandings, activities, interactions, relationships, ways of thinking, and grounded habits of intuiting based on a broad knowledge of many things such as society, families, children, psychology, democracy, learning, ethics, community, pedagogy, and forms of inquiry and creativity (Simpson, Jackson, & Aycock, 2005). A career as a faculty member in a career and technical education program can be worthwhile and fulfilling.
CHAPTER THREE

METHODOLOGY

Research Design

This descriptive correlational study examined relationships between the independent variables and the primary dependent variable, teaching efficacy. Advantages of correlational studies include the ability to analyze how variables affect patterns of behavior and the ability to analyze the degree of the relationship between variables. Correlational studies define the relationship between variables but do not demonstrate cause-and-effect between the variables (Borg & Gall, 1998).

Research Variables

This study examined the relationship between multiple independent variables and one dependent variable, teaching efficacy. Independent variables are those variables that are likely to influence the outcomes observed while dependent variables are the outcomes influenced by the independent variable (Creswell, 2009). For the purpose of this study, the independent variables examined included:

- Level of education of the faculty member,
- Whether the faculty member held a teaching degree,
- Length of teaching service, and
- Length of industry service.

The dependent variable examined was the level of teacher efficacy of the career and technical education faculty member as measured by a modified version of the Teachers’ Sense of Efficacy Scale as developed by Woolfolk and Hoy (1998).
Selection of Subjects

The population for this study consisted of career and technical education faculty at Kansas technical and community colleges. The entire population ($N=726$) was surveyed for this study. These faculty teach within career and technical education programs within 26 institutions of higher education in the state of Kansas including seven technical colleges and 19 community colleges. A complete list of institutions, number of career and technical education programs at each institution, and number of career and technical education faculty at each institution is included in Appendix A.

E-mail addresses for each full-time career and technical education faculty member were obtained through program directories at each technical college and community college. Faculty were contacted via email through procedures described and invited to participate in the study by completing an electronic survey.

Human Subjects Approval

Subjects were provided with information regarding informed consent for consideration and respect of the subjects of the population (Jupp, 2006). They were informed that their participation in this study is completely voluntary including their right to decline to participate in the study. The subjects received description of the purpose of the research, which conducted the research, how the research was being promoted and how research findings are to be disseminated. The researcher obtained human subjects approval through the institutional review board before commencing with this study. A copy of the approval letter from the institutional review board is included in Appendix G.
**Instrumentation**

This study used a modified version of the Teachers’ Sense of Efficacy Scale as developed by Woolfolk and Hoy (1998). The Woolfolk and Hoy instrument, which was designed for K-12 teachers, included twelve scale items with a nine-point scale. Items in the instrument that referred to K-12 instructional situations were modified for this study by replacing K-12 terminology with postsecondary terminology. Permission was obtained through personal correspondence from the instrument developer on February 28, 2011, to utilize and modify the instrument.

It was necessary to modify the Teachers’ Sense of Efficacy Scale so that it could be used with career and technical education faculty employed at Kansas technical and community colleges as some scale items were specific to teachers’ roles in K-12 classrooms. Table one includes scale items from the original instrument and corresponding changes made to each scale item so the instrument could be used with postsecondary career and technical education faculty (see table one).

Table 1

<table>
<thead>
<tr>
<th>Item</th>
<th>Original Scale Item</th>
<th>Modified Scale Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>How much can you do to get children to follow classroom rules?</td>
<td>How much can you do to get students to follow class rules?</td>
</tr>
<tr>
<td>11</td>
<td>How much can you assist families in helping their children do well in school?</td>
<td>How much can you assist students to do well in class?</td>
</tr>
</tbody>
</table>
A complete copy of the instrument including demographic questions and scale items as used in this study is included in Appendix B.

Instrument Pilot Testing and Reliability

The modified instrument, based upon Teachers’ Sense of Efficacy Scale (Woolfolk & Hoy, 1998), was pilot tested with twelve members of the population for this study. The researcher identified career and technical education faculty at Kansas technical and community colleges to participate in the pilot testing of the instrument. The purpose of pilot testing was to ensure the modified instrument could be administered and would record accurate data from the respondents. Fink and Kosecoff (1998) state that pilot testing should answer the following questions about the instrument:

- Will the survey provide the needed information?
- Are the questions appropriate?
- Will information collectors be able to use the survey forms properly?
- Are procedures standardized?
- How consistent is information obtained?

Cronbach's alpha was used to assess the reliability of the modified study instrument following the pilot testing period. The Cronbach’s alpha level for this survey was .869 for a total of \( n=12 \) career and technical education faculty who participated in the pilot testing of the study. No modifications were made to the study instrument based upon the observed Cronbach’s alpha level for the pilot testing of the instrument.

Data Collection Procedures

Data for this study was collected through the use of an electronic survey. The primary advantage of survey-based research is the ability to quickly and easily distribute surveys to large
populations and to quickly and easily gather quantitative data (Jarvis, 2005). Web-based surveys allow participants to complete the survey at their convenience (Trochim & Donnelly, 2008).

Contact with subjects occurred using a four-step procedure as suggested by Salant and Dillman (1994):

1. Send an advanced notice email to all subjects informing they have been selected to participate and will be receiving an electronic survey to complete in approximately one week. A copy of the advanced email notice is included in Appendix C.

2. Send an email approximately one-week later inviting subjects to participate in study. The email will include an informed consent document as well as a link to the electronic survey and a tracking number unique to each participant to track non-responders. A copy of the email is included in Appendix D.

3. Send a first follow-up email approximately one week after the second email that will request a response from those who have not completed the survey. A copy of the first follow-up email is included in Appendix E.

4. Send a second follow-up email approximately one week after the first follow-up email asking for a response from those who have not completed the survey. A link to the electronic survey will be included. The date that the survey will close will be included in this final email. The survey will close approximately 10 days after this email is sent. A copy of the second follow-up email is included in Appendix F.
Data Collection Timeline

For this study, the advance email notification was sent to the entire population on October 3, 2011. The initial email with the survey link and tracking number was sent to the entire population on October 5, 2011. Slightly less than half of the total participants that responded to the survey responded after the initial email containing the survey link and tracking number (n=90, 49.8%). The first follow-up email with the survey link and tracking number with a reminder request to participate in the study was sent to non-responders on October 11, 2011. Slightly less than one-third of the total participants that responded to the survey responded after the first follow-up email (n=55, 30.4%). A second follow-up email with the survey link and tracking number with a reminder request to participate in the study was sent to non-responders on October 16, 2011. The remaining responders of the total participants responded after the second follow-up email (n=36, 19.8%) (see table two).

Table 2

Response Rate by Wave of Kansas Career and Technical Education Faculty Participating in Study of Teaching Efficacy

<table>
<thead>
<tr>
<th>Wave</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial email with survey link</td>
<td>90</td>
<td>49.8</td>
</tr>
<tr>
<td>First follow-up email with survey link</td>
<td>55</td>
<td>30.4</td>
</tr>
<tr>
<td>Second follow-up email with survey link</td>
<td>36</td>
<td>19.8</td>
</tr>
<tr>
<td>Total</td>
<td>181</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Instrument Factor Analysis

The twelve questions in the modified version of Woolfolk and Hoy’s (1998) Teachers’ Sense of Efficacy Scale were factor analyzed following data collection period. Woolfolk and Hoy (1998) stated that a factor analysis should be conducted with each administration of the Teachers’ Sense of Efficacy Scale. Their analysis typically yielded three factors including:

- Teaching Efficacy in Classroom Management,
- Teaching Efficacy in Instructional Practices, and

The researcher conducted a confirmatory factor analysis to determine the factors based upon the responses to the study. Through this process it was observed that the Kaiser-Meyer-Okin Measure of Sampling Adequacy (KMO) was .848 and that the Bartlett's Test of Sphericity was statistically significant $x^2 = 898.596$, $df = 66$, $p = .000$. Likewise, the confirmatory factor analysis also yielded three factors including:

- Factor One: Teaching Efficacy in Classroom Management,
- Factor Two: Teaching Efficacy in Instructional Practices, and
- Factor Three: Teaching Efficacy in Student Engagement.

See table three for a list of scale of items that loaded within each factor for the confirmatory factor analysis.
Table 3

Confirmatory Factor Analysis for Modified Version of Woolfolk and Hoy Teachers’ Sense of Efficacy Scale

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factors 1</th>
<th>Factors 2</th>
<th>Factors 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much can you do to calm a student who is disruptive or noisy?</td>
<td>.847</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much can you do to get students to follow class rules?</td>
<td>.776</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much can you do to control disruptive behavior in the classroom?</td>
<td>.772</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How well can you establish a classroom management system with each group of students?</td>
<td>.724</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much can you use a variety of assessment strategies?</td>
<td></td>
<td>.774</td>
<td></td>
</tr>
<tr>
<td>To what extent can you provide an alternative explanation or example when students are confused?</td>
<td></td>
<td>.758</td>
<td></td>
</tr>
<tr>
<td>How well can you implement alternative strategies in your class?</td>
<td></td>
<td>.728</td>
<td></td>
</tr>
<tr>
<td>To what extent can you craft good questions for your students?</td>
<td></td>
<td></td>
<td>.650</td>
</tr>
<tr>
<td>How much can you assist students to do well in class?</td>
<td></td>
<td></td>
<td>.536</td>
</tr>
<tr>
<td>How much can you do to help your student’s value learning?</td>
<td></td>
<td></td>
<td>.826</td>
</tr>
<tr>
<td>How much can you do to get students to believe they can do well in schoolwork?</td>
<td></td>
<td></td>
<td>.804</td>
</tr>
<tr>
<td>How much can you do to motive students who show low interest in schoolwork?</td>
<td></td>
<td></td>
<td>.703</td>
</tr>
</tbody>
</table>
Data Analysis by Research Objective

Objective One: Describe career and technical education faculty at Kansas technical and community colleges on the following demographic variables:

- Age,
- Gender,
- Level of education,
- Teaching degree status,
- Tenure Status,
- Years of teaching service, and
- Years of industrial experience.

Means and standard deviations were used to analyze data for continuous variables including age, years of teaching service, and years of industrial experience. Frequencies and percentages were used to analyze data for nominal and ordinal variables including gender, level of education, teaching degree status, and tenure status.

Objective Two: Describe the types of teaching efficacy among career and technical education faculty at Kansas technical and community colleges by their level of education. Mean values were used to summarize data of career and technical education faculty that fit within the types of teaching efficacy as identified through the confirmatory factor analysis by level of education.

Objective Three: Examine the relationship between teaching degree status and level of teaching efficacy of career and technical education faculty at Kansas technical and community colleges. Independent sample t-tests were used to compare the two groups, faculty with a
teaching degree and faculty without a teaching degree, for each type of teaching efficacy as identified through the confirmatory factor analysis.

Objective Four: Examine the relationship between length of teaching service and level of teaching efficacy of career and technical education faculty at Kansas technical and community colleges. Pearson's Product Moment Correlation Coefficient were calculated for the variable years of teaching service and each type of teaching efficacy as identified through the confirmatory factor analysis.

Objective Five: Examine the relationship between length of industry service and level of teaching efficacy of career and technical education faculty at Kansas technical and community colleges. Pearson's Product Moment Correlation Coefficient will be calculated for the variable years of industry experience and each type of teaching efficacy as identified through the confirmatory factor analysis.
CHAPTER FOUR

FINDINGS

The purpose of this study was to examine characteristics of full-time postsecondary career and technical education faculty in Kansas technical and community colleges in relation to their levels of teaching efficacy. Survey participants were asked to describe their demographic characteristics and to complete a twelve-item survey regarding levels of teaching efficacy. This chapter presents findings of this research as they relate to each objective outlined by this study.

Survey results are based upon a population sample of $N=726$ full-time career and technical education faculty in Kansas technical and community colleges. Contact information for the members of the population was obtained from directory information of postsecondary career and technical education programs at each of the seven technical colleges and nineteen community colleges throughout the state of Kansas. The response rate for this study was 24.9% ($n=181$).

Objective One

Objective one of this study was to describe postsecondary career and technical education faculty at Kansas technical and community colleges on the following demographic variables:

- Age,
- Gender,
- Level of education,
- Teaching degree status,
- Tenure Status,
- Years of teaching service, and
- Years of industrial experience.
Age

The first demographic variable on which respondents were described was current age. Respondents were asked to report their current age. This information was reported as a continuous variable. The mean age of the respondents was 49.41 with a standard deviation of 11.421 (n=181).

Gender

The second demographic variable on which respondents were described was gender. A slight majority of respondents reported their gender as female (n=92, 50.8%). Respondents that reported their gender as male was eighty-nine (n=89, 49.2%) (see table four).

Table 4
Gender as Reported by Kansas Career and Technical Education Faculty

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>92</td>
<td>50.8</td>
</tr>
<tr>
<td>Male</td>
<td>89</td>
<td>49.2</td>
</tr>
<tr>
<td>Total</td>
<td>181</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Level of Education

The third demographic variable on which respondents were described was their level of education. Respondents were asked to select their highest level of education specified by the following degree levels: Certificate/Diploma, Associate Degree, Bachelor’s Degree, Master’s Degree, Specialist Degree and Doctoral Degree.
The level of education with the highest number of respondents reporting was “Master’s Degree” with slightly less than half of all respondents ($n=83, 45.9\%$). Forty-nine respondents ($n=49, 27.1\%$) reported their level of education as “Bachelor Degree”, twenty-two respondents ($n=22, 12.2\%$) reported their level of education as “Associate Degree”, fourteen respondents ($n=14, 7.7\%$) reported their level of education as “Certificate/Diploma”, ten respondents ($n=10, 5.5\%$) reported their level of education as “Doctoral Degree”, and three respondents ($n=3, 1.7\%$) reported their level of education as “Specialist Degree”.

Respondents reporting a level of education at bachelor degree or higher was one hundred forty-five ($n=145, 80.1\%$) with ninety-six of the respondents ($n=96, 53.0\%$) reporting a level of education that included a graduate degree (see table five).

Table 5

<table>
<thead>
<tr>
<th>Level of Education Category</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate/Diploma</td>
<td>14</td>
<td>7.7</td>
</tr>
<tr>
<td>Associate Degree</td>
<td>22</td>
<td>12.2</td>
</tr>
<tr>
<td>Bachelor Degree</td>
<td>49</td>
<td>27.1</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>83</td>
<td>45.9</td>
</tr>
<tr>
<td>Specialist Degree</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>Doctoral Degree</td>
<td>10</td>
<td>5.5</td>
</tr>
<tr>
<td>Total</td>
<td>181</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Teaching Degree Status

The fourth demographic variable on which respondents were described was whether or not the respondent held a teaching degree at any level. Slightly less than two-thirds of all respondents ($n=117$, 64.6%) indicated that they did not hold a teaching degree while sixty-four respondents ($n=64$, 35.4%) reported that they did hold a teaching degree (see table six).

Table 6
Status of Teaching Degree as Reported by Kansas Career and Technical Education Faculty

<table>
<thead>
<tr>
<th>Teaching Degree Category</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Held Teaching Degree</td>
<td>64</td>
<td>35.4</td>
</tr>
<tr>
<td>Did Not Hold Teaching Degree</td>
<td>117</td>
<td>64.6</td>
</tr>
<tr>
<td>Total</td>
<td>181</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Tenure Status

The fifth demographic variable on which respondents were described was their tenure status. Slightly less than two-thirds of all respondents ($n=117$, 64.6%) indicated that they did have tenure at their educational institution while sixty-four respondents ($n=64$, 35.4%) reported that they did not have tenure at their education institution (see Table 7).

Years of Teaching Service

The sixth demographic variable on which respondents were described was their years of teaching experience. Respondents were asked to report their years of teaching experience. This information was reported as a continuous variable. The mean years of teaching experience of the
respondents was 11.71 with a standard deviation of 10.022 ($n=181$). The range of years of teaching experience varied from a minimum of zero years to a maximum of 44 years.

Table 7

<table>
<thead>
<tr>
<th>Tenure Category</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenured</td>
<td>117</td>
<td>64.6</td>
</tr>
<tr>
<td>Not Tenured</td>
<td>64</td>
<td>35.4</td>
</tr>
<tr>
<td>Total</td>
<td>181</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Years of Industrial Experience**

The seventh demographic variable on which respondents were described was their years of industrial experience. Respondents were asked to report their years of industry experience. This information was reported as a continuous variable. The mean years of industry experience of the respondents was 14.69 with a standard deviation of 11.517 ($n=181$). The range of years of industry experience varied from a minimum of zero years to a maximum of 49 years.

**Objective Two**

Objective two of this study was to describe the types of teaching efficacy among postsecondary career and technical education faculty at Kansas technical and community colleges by their level of education. Mean values were used to summarize the relationship of postsecondary career and technical education faculty by level of education with the types of
teaching efficacy identified through the confirmatory factor analysis. Table 8 provides means values for each level of education for each of the factors of teaching efficacy (see table eight).

Table 8

Teaching Efficacy Levels for Each Level of Education Among Kansas Technical and Community College Career and Technical Education Faculty

<table>
<thead>
<tr>
<th>Type of Teaching Efficacy</th>
<th>Certificate/Diploma</th>
<th>Associate Degree</th>
<th>Bachelor Degree</th>
<th>Masters Degree</th>
<th>Specialist Degree</th>
<th>Doctoral Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom Management</td>
<td>7.4285</td>
<td>3.7321</td>
<td>7.4183</td>
<td>7.4939</td>
<td>7.9333</td>
<td>7.2750</td>
</tr>
</tbody>
</table>

**Objective Three**

Objective three of this study was to examine the difference between teaching degree status and level of teaching efficacy of postsecondary career and technical education faculty at Kansas technical and community colleges. Independent sample t-tests were used to compare the two groups, faculty with a teaching degree and faculty without a teaching degree.

The results of the independent samples t-tests indicated that there was no statistically significant difference between faculty with a teaching degree and faculty without a teaching degree for the factors of Teaching Efficacy in Classroom Management \( t(179) = 1.271, p = .205 \) and Teaching Efficacy in Student Engagement \( t(179) = 1.051, p = .295 \). The results of the independent t-tests indicated that there was a statistically significant difference between faculty
with a teaching degree and faculty without a teaching degree for the factor of Teaching Efficacy in Instructional Practices $t(179) = 2.116, p = .036$ (see table nine).

Table 9
Comparison of Type of Teaching Efficacy by Teaching Degree Status

<table>
<thead>
<tr>
<th>Type of Teaching Efficacy</th>
<th>$t$</th>
<th>$df$</th>
<th>$p$</th>
<th>Mean difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom Management</td>
<td>1.271</td>
<td>179</td>
<td>.205</td>
<td>--</td>
</tr>
<tr>
<td>Instructional Practices</td>
<td>2.116</td>
<td>179</td>
<td>.036</td>
<td>.307</td>
</tr>
<tr>
<td>Student Engagement</td>
<td>1.051</td>
<td>179</td>
<td>.295</td>
<td>--</td>
</tr>
</tbody>
</table>

**Objective Four**

Objective four of this study was to examine the relationship between length of teaching service and level of teaching efficacy. Pearson's Product Moment Correlation Coefficient was calculated for the variable years of teaching service and each factor of teaching efficacy (Classroom Management, Instructional Practices, and Student Engagement).

Results of the Pearson's Product Moment Correlation Coefficient indicated that no statistically significant relationship existed between the variables of length of teaching service and the factor of Teaching Efficacy in Classroom Management ($r = .130, p = .082$).

The analysis indicated that no statistically significant relationship existed between the variables of length of teaching service and the factor of Teaching Efficacy in Instructional Practices ($r = .121, p = .105$).
It was also indicated that no statistically significant relationship existed between the variables of length of teaching service and the factor of Teaching Efficacy in Student Engagement ($r = -0.065, p = 0.382$).

Table 10

<table>
<thead>
<tr>
<th>Type of Teaching Efficacy</th>
<th>$r$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom Management</td>
<td>0.130</td>
<td>0.082</td>
</tr>
<tr>
<td>Instructional Practices</td>
<td>0.121</td>
<td>0.105</td>
</tr>
<tr>
<td>Student Engagement</td>
<td>-0.065</td>
<td>0.382</td>
</tr>
</tbody>
</table>

**Objective Five**

Objective five of this study was to examine the relationship between length of industry experience and level of teaching efficacy. Pearson's Product Moment Correlation Coefficient was calculated for the variable years of industry experience and each factor of teaching efficacy (Classroom Management, Instructional Practices, and Student Engagement).

Results of the Pearson's Product Moment Correlation Coefficient analysis indicated that no statistically significant relationship existed between the variables of length of industry experience and the factor of Teaching Efficacy in Classroom Management ($r = 0.128, p = 0.085$).

The analysis indicated that no statistically significant relationship existed between the variables of length of industry experience and the factor of Teaching Efficacy in Instructional Practices ($r = -0.048, p = 0.521$).
The analysis also indicated that no statistically significant relationship existed between the variables of length of industry experience and the factor of Teaching Efficacy factor in Student Engagement ($r = -.019, p = .797$).

Table 11

<table>
<thead>
<tr>
<th>Type of Teaching Efficacy</th>
<th>$r$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom Management</td>
<td>.128</td>
<td>.085</td>
</tr>
<tr>
<td>Instructional Practices</td>
<td>-.048</td>
<td>.521</td>
</tr>
<tr>
<td>Student Engagement</td>
<td>-.019</td>
<td>.797</td>
</tr>
</tbody>
</table>
CHAPTER FIVE

DISCUSSION

Summary of Study Purpose and Methods

The purpose of this study was to describe postsecondary career and technical education faculty at Kansas technical and community colleges regarding their demographic characteristics and their levels of teaching efficacy. Respondents were surveyed to provide data regarding their demographic characteristics and levels of teaching efficacy.

Research Objectives

Five objectives guided this study and those objectives included:

Objective One: Describe postsecondary career and technical education faculty at Kansas technical and community colleges on the following demographic variables:

- Age,
- Gender,
- Level of education,
- Teaching degree status,
- Tenure Status,
- Years of teaching service, and
- Years of industrial experience.

Objective Two: Describe the types of teaching efficacy among postsecondary career and technical education faculty at Kansas technical and community colleges by their level of education.
Objective Three: Examine the relationship between teaching degree status and level of teaching efficacy of postsecondary career and technical education faculty at Kansas technical and community colleges.

Objective Four: Examine the relationship between length of teaching service and level of teaching efficacy of postsecondary career and technical education faculty at Kansas technical and community colleges.

Objective Five: Examine the relationship between length of industry service and level of teaching efficacy of postsecondary career and technical education faculty at Kansas technical and community colleges.

Study Participants and Response

For this study, a population sample was used consisting of faculty from postsecondary career and technical education programs in Kansas technical and community colleges ($N=726$). Directory information from Kansas technical and community colleges was utilized to identify full-time postsecondary career and technical education faculty. The response rate for this study was 24.9% ($n=181$).

Instrumentation

The researcher used a modified version of the Teachers’ Sense of Efficacy Scale developed by Woolfolk and Hoy (1998). The instrument was modified with permission from the developers to replace K-12 terminology with postsecondary terminology. The instrument consisted of questions regarding demographic characteristics and a twelve-item survey scored on a nine-point Likert scale. The instrument was pilot tested using twelve faculty identified for the pilot test resulting in a Cronbach’s alpha level of .869. After data collection, the data was summarized using SPSS statistical software.
Confirmatory factor analysis of the modified version of the Teachers’ Sense of Efficacy Scale developed by Woolfolk and Hoy (1998) yielded three factors. These factors indicated the types of teaching efficacy that existed among postsecondary career and technical education faculty. Those factors or types of teaching efficacy included:

- Factor One: Teaching Efficacy in Classroom Management,
- Factor Two: Teaching Efficacy in Instructional Practices, and
- Factor Three: Teaching Efficacy in Student Engagement.

**Data Collection**

Respondents were sent an advanced email notice on October 3, 2011, requesting their participation in the upcoming survey. They were sent an email on October 5, 2011, containing a link to a web-based survey along with a tracking number to assist reducing non-response error. Two follow-up emails were sent on October 11, 2011, and October 16, 2011, to non-responders to reduce the non-response rate. Responses were collected until October 21, 2011, at which time the survey closed to responses and data was collected.

**Summary of Results and Discussion**

**Objective One**

The first objective of this study was to describe the demographic characteristics of postsecondary career and technical education faculty at Kansas technical and community colleges. Demographic characteristics identified were age, gender, level of education, teaching degree status, tenure status, years of teaching service, and years of industry experience.

The mean age of the respondents was 49.41 with a standard deviation of 11.421 (n=181). Respondents were almost equally split between female (n=92, 50.8) and male (n=89, 49.2%). The level of education with the highest number of respondents reporting was “Master’s Degree”
with slightly less than half of all respondents \((n=83, 45.9\%)\). Slightly less than two-thirds of all respondents \((n=117, 64.6\%)\) indicated that they did not hold a teaching degree. Slightly less than two-thirds of all respondents \((n=117, 64.6\%)\) indicated that they did have tenure at their educational institution. The mean years of teaching experience of the respondents was 11.71 (SD=10.022). The mean years of industry experience of the respondents was 14.69 (SD=11.517) \((n=181)\).

Demographic data collected from respondents of this study suggests that faculty who participated in this study were generally at mid-career and likely became faculty members in postsecondary career and technical education programs after obtaining invaluable industry experience. Most faculty held advanced degrees, although they generally did not hold a teaching degree. These results further suggest that questions may remain whether one should obtain either a teaching degree or an advanced degree prior to employment as a postsecondary career and technical faculty member. However, given that postsecondary career and technical education faculty had on average one decade of teaching experience, might suggest that teaching ability, and one’s sense of teaching efficacy for that matter, may have developed through experience in the postsecondary career and technical education classroom.

**Objective Two**

The second objective of this study was to describe the types of teaching efficacy among postsecondary career and technical education faculty at Kansas technical and community colleges by their level of education. Mean values across all levels of education for all three factors of teaching efficacy generally ranged from 6.5613 to 8.0600 for the three types of teaching efficacy including Classroom Management, Instructional Practices, and Student Engagement.
There was, however, one outlier mean value of 3.7321 for faculty with an Associate degree in regards to Teaching Efficacy in Classroom Management. This relatively low level of teaching efficacy regarding classroom management abilities among postsecondary career and technical education faculty with an associate’s degree suggests that this group might need additional training in order to better prepare them for their instructional roles. Career and technical education programs, including those at the postsecondary level that were the focus of this study, allow individuals with associate’s degree and practical industrial experience to become employed as full-time faculty members. It essentially takes both the practical understanding of the field that is obtained through industrial experience coupled with adequate teaching service in order to be successful in the classroom.

**Objective Three**

The third objective of this study was to examine the difference between teaching degree status and level of teaching efficacy of postsecondary career and technical education faculty at Kansas technical and community colleges. Independent samples t-tests indicated no statistically significant difference between teaching degree status and level of teaching efficacy for the factors of Teaching Efficacy in Classroom Management and Teaching Efficacy in Student Engagement. The independent t-tests did indicate a statistically significant difference between teaching degree status of level of teaching efficacy for the factor of Teaching Efficacy for Instructional Practices \( t(179) = 2.116, p = .036 \). Between faculty with a teaching degree and faculty without a teaching degree, there was a mean difference of .307 lower for faculty without a teaching degree.

As previously stated, postsecondary career and technical education faculty are frequently hired based upon their industry experience with little or no teaching experience or without
possession of a teaching degree. In regards to Teaching Efficacy in Classroom Management and Teaching Efficacy in Student Engagement, faculty with a teaching degree did not show higher levels of teaching efficacy that faculty that did not have a teaching degree. Faculty with a teaching degree did show higher levels of regarding Teaching Efficacy in Instructional Practices. Teaching Efficacy in Classroom Management and Teaching Efficacy in Student Engagement are more likely driven by internal personal characteristics of faculty, whereas Teaching Efficacy in Instructional Practices may be influenced more by the knowledge of teaching practices.

Objective Four

The fourth objective of this study was to examine the relationship between length of teaching service and level of teaching efficacy. Results of a correlational analysis indicated no statistically significant relationship between years of teaching experience and level of teaching efficacy for each factor of Teaching Efficacy in Classroom Management ($r= .130, p=.082$), Teaching Efficacy in Instructional Practices ($r=.121, p=.105$), and Teaching Efficacy in Student Engagement ($r=-.065, p=.382$).

Years of teaching service can be one factor in improving teacher performance. As faculty grow and develop teaching skills through years of service, their performance should grow and develop accordingly. The results of this study, however, indicate no relationship between years of teaching service and levels of teaching efficacy. New faculty and experienced faculty were not shown to possess differing levels of teaching efficacy.

Objective Five

The fifth objective of this study was to examine the relationship between length of industry experience and level of teaching efficacy of postsecondary career and technical education faculty at Kansas technical and community colleges. Results of a correlational
analysis indicated no statistically significant relationship between years of industry experience and level of teaching efficacy for each factor of Teaching Efficacy in Classroom Management ($r = .128, p = .085$), Teaching Efficacy in Instructional Practices ($r = -.048, p = .521$), and Teaching Efficacy in Student Engagement ($r = -.019, p = .797$).

While industry experience is a valuable asset for postsecondary career and technical education faculty and may be a contributing factor in the hiring process of postsecondary career and technical education faculty, the amount of industry experience has little bearing on levels of teaching efficacy.

**Recommendations**

Based on the findings of this study, the following recommendations are made for future practice and research.

1. Data for the difference between teaching degree status and levels of teaching efficacy were analyzed using an independent sample t-test. Although no causal conclusions can be drawn about the influence of teaching degree status and levels of efficacy based upon the results of this study, future studies might further explore how teaching efficacy is shaped among those postsecondary career and technical educators who hold a teaching degree. Such a study might examine if one’s praxis is in fact shaped through the pedagogical theory that embodies teacher education programs.

2. Data for the relationship between years of teaching service and levels of teaching efficacy and years of industry experience and levels of teaching efficacy were analyzed using correlation coefficients statistics. Likewise, no causal conclusions can be made in regards to either years of teaching service or years of industry experience.
experience in regards to levels of teaching efficacy. Similar to a future analysis of how teaching efficacy is shaped among career and technical education faculty with teaching degrees, it might be valuable to determine if industry experience that is directly relevant to the postsecondary career and technical education faculty member’s discipline has shaped their sense of efficacy. This type of study might examine how practical on-the-job industry experience has shaped one’s confidence as educators.

3. Analysis of data through the study instrument provided an indication of teaching efficacy levels among the study participants. There may be a disconnect between their perception of their teaching efficacy level and their level of teaching efficacy. Faculty, especially postsecondary career and technical education faculty who were the focus of this study, might benefit from opportunities to explore their teaching efficacy and examine methods to improve their sense of teaching efficacy. Professional development activities could focus on how efficacy could be improved as it relates to classroom management, instructional practices, and student engagement. Faculty could benefit from the opportunity to network and share ideas with peers about how to enhance their teaching abilities.

4. This study viewed teaching efficacy from the viewpoint of the faculty. Further determination of one’s level of teaching efficacy might be derived from the student’s viewpoint. Student feedback regarding the faculty members’ ability in the classroom could come from student evaluations of instruction that are currently commonly used in most postsecondary classrooms. Evaluations of instruction most likely already include specific questions that provide faculty
members’ feedback regarding their skills in the three areas of teaching efficacy examined in this study including classroom management, instructional practices, and student engagement. Careful review of these results coupled with purposeful faculty evaluation can assist faculty members in properly examining their sense of teaching efficacy and determining methods to improve their teaching practice, therefore improving their sense of efficacy.

5. A follow-up qualitative data to explore teaching efficacy among postsecondary career and technical education faculty is recommended as a method to gather further information into the reasoning behind the self-reported levels of teaching efficacy. This type of study could assist in determining how relevant pre-teaching experiences such as one’s educational background, industrial experience, or specialized training, affect teaching efficacy.

6. The population for this study consisted of postsecondary career and technical education faculty at Kansas technical and community colleges. While the results of this study should generalize for the population of postsecondary career and technical education faculty at Kansas technical and community colleges, further research in levels of teaching efficacy in other levels of faculty, such as faculty in secondary career and technical education programs, faculty in non-career and technical education programs, or faculty at the university level, may be warranted. All educators can benefit from an understanding of their sense of teaching efficacy.
Conclusion

At any level of education, faculty play an important role in facilitating student learning. There are many ways in which faculty facilitate student learning including classroom management, instructional practices, and student engagement. In postsecondary career and technical education programs, faculty utilize prior industry experience as a basis for classroom instruction.

While prior industry experience is important for postsecondary career and technical education faculty, there are other areas in which postsecondary career and technical education faculty must develop to be effective. Miller & Miller (2003) stated that areas that determine the effectiveness of career and technical education faculty include “(a) technical competency (the knowledge and skills to be taught), (b) professional competency (knowledge of planning, delivery, and evaluation), and (c) personal competency (personal characteristics and behaviors that impact the teaching/learning process)” (p.2). Appropriate industry experience, while it is one factor that influences student learning, is not the only factor postsecondary career and technical education faculty possess that can influence student learning. Personal characteristics and behavior as well as professional competence of faculty can have a substantial influence on learning (Miller & Miller, 2003).

Faculty attitudes and behaviors create a learning environment for their students. These attitudes and behavior can have either a positive or negative effect on their students. Riggs and Gholar (2009) indicated that faculty “should assume responsibility for creating excitement, enthusiasm, and the will to learn, succeed, and survive in those students who have given up the race long before approaching the starting line” (p. 6). Students may have many obstacles to overcome in order for learning to occur. Faculty must be responsive to the needs of their
students. Riggs and Gholar (2009) affirmed that faculty “who listen, understand, provide wisdom, and share thoughts, opinions and facts impact students who need hope, promise, and purpose” (p. 113).

Teaching efficacy is a meaningful part of teacher performance and student learning. Faculty with high teaching efficacy believe in their abilities and the abilities of their students. Through these beliefs, an effective learning environment that promotes student learning can be created.

Providing postsecondary career and technical education faculty with means of improving their levels of teaching efficacy is important. The development of teaching efficacy pays huge dividends for schools and all levels of faculty (Yost, 2002). Shidler indicated, “determining ways in which to build teacher efficacy throughout their careers would prove to be a worthwhile endeavor when looking to accelerate student achievement” (p. 454).

This descriptive correlational study intended to show levels of teaching efficacy among faculty in postsecondary career and technical education faculty in Kansas technical and community colleges and indicate whether level of education, having a teaching degree, the number of years of teaching service or the number of years of industry experience were influencing factors among these faculty. The literature in this area strongly suggests that importance of teaching efficacy in establishing and maintaining a high-quality learning environment. While the results of the study did indicate high levels of teaching efficacy through the mean scores on the survey, the study did not find level of education, having a teaching degree, years of teaching service or years of industry experience to be significant factors in most situations in influencing teaching efficacy. If these factors do not influence levels of teaching efficacy, further research is needed to determine what factors do influence teaching efficacy.
REFERENCES


APPENDIX A

LIST OF KANSAS TECHNICAL AND COMMUNITY COLLEGES,
CAREER AND TECHNICAL EDUCATION PROGRAMS, AND
CAREER AND TECHNICAL EDUCATION FACULTY
### Kansas Community Colleges

<table>
<thead>
<tr>
<th>Name</th>
<th>City</th>
<th>Number of CTE Programs</th>
<th>Number of CTE Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allen County Community College</td>
<td>Iola</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>Barton County Community College</td>
<td>Great Bend</td>
<td>21</td>
<td>16</td>
</tr>
<tr>
<td>Butler Community College</td>
<td>El Dorado</td>
<td>16</td>
<td>46</td>
</tr>
<tr>
<td>Cloud County Community College</td>
<td>Concordia</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Coffeyville Community College</td>
<td>Coffeyville</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td>Colby Community College</td>
<td>Colby</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Cowley County Community College</td>
<td>Arkansas City</td>
<td>28</td>
<td>7</td>
</tr>
<tr>
<td>Dodge City Community College</td>
<td>Dodge City</td>
<td>17</td>
<td>31</td>
</tr>
<tr>
<td>Fort Scott Community College</td>
<td>Fort Scott</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>Garden City Community College</td>
<td>Garden City</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Highland Community College</td>
<td>Highland</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Hutchinson Community College</td>
<td>Hutchinson</td>
<td>34</td>
<td>35</td>
</tr>
<tr>
<td>Independence Community College</td>
<td>Independence</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td>Johnson County Community College</td>
<td>Overland Park</td>
<td>35</td>
<td>115</td>
</tr>
<tr>
<td>Kansas City KS Community College</td>
<td>Kansas City</td>
<td>25</td>
<td>64</td>
</tr>
<tr>
<td>Labette Community College</td>
<td>Parsons</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Neosho County Community College</td>
<td>Chanute</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Pratt Community College</td>
<td>Pratt</td>
<td>20</td>
<td>11</td>
</tr>
<tr>
<td>Seward County Community College</td>
<td>Liberal</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td><strong>Total – Community Colleges</strong></td>
<td></td>
<td><strong>366</strong></td>
<td><strong>509</strong></td>
</tr>
</tbody>
</table>

### Kansas Technical Colleges

<table>
<thead>
<tr>
<th>Name</th>
<th>City</th>
<th>Number of CTE Programs</th>
<th>Number of CTE Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flint Hills Technical College</td>
<td>Emporia</td>
<td>15</td>
<td>24</td>
</tr>
<tr>
<td>Manhattan Area Technical College</td>
<td>Manhattan</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>North Central Technical College</td>
<td>Beloit</td>
<td>23</td>
<td>54</td>
</tr>
<tr>
<td>Northwest Technical College</td>
<td>Goodland</td>
<td>15</td>
<td>24</td>
</tr>
<tr>
<td>Salina Area Technical College</td>
<td>Salina</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Washburn Institute of Technology</td>
<td>Topeka</td>
<td>25</td>
<td>34</td>
</tr>
<tr>
<td>Wichita Area Technical College</td>
<td>Wichita</td>
<td>60</td>
<td>45</td>
</tr>
<tr>
<td><strong>Totals – Technical Colleges</strong></td>
<td></td>
<td><strong>166</strong></td>
<td><strong>217</strong></td>
</tr>
<tr>
<td><strong>Totals – Community Colleges and Technical Colleges</strong></td>
<td></td>
<td><strong>532</strong></td>
<td><strong>726</strong></td>
</tr>
</tbody>
</table>
APPENDIX B

MODIFIED TEACHERS' SENSE OF EFFICACY SCALE
MODIFIED TEACHERS' SENSE OF EFFICACY SCALE

1. Please enter your tracking code number from the email: ______

2. What is your current age? ______

3. What is your gender? Male ❑ Female ❑

4. What is the name of the program in which you teach? __________________________

5. What is your highest level of education? Certificate/Diploma ❑ Associate Degree ❑ Bachelor Degree ❑ Masters Degree ❑ Specialist Degree ❑ Doctoral Degree ❑

6. Do you have a teaching degree? Yes ❑ No ❑

7. Are you tenured or not tenured? Tenured ❑ Not Tenured ❑

8. How many years of full-time teaching experience do you have? ______

9. How many years of full-time industrial experience do you have? ______
Answer the following questions using the following scale:

1 = Nothing  3 = Very Little  5 = Some Influence  7 = Quite a Bit  9 = A Great Deal

<table>
<thead>
<tr>
<th>Teacher’s Beliefs</th>
<th>How much can you do?</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. How much can you do to control disruptive behavior in the classroom?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>11. How much can you do to motivate students who show low interest in schoolwork?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>12. How much can you do to get students to believe they can do well in schoolwork?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>13. How much can you do to help your students value learning?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>14. To what extent can you craft good questions for your students?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>15. How much can you do to get students to follow class rules?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>16. How much can you do to calm a student who is disruptive or noisy?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>17. How well can you establish a classroom management system with each group of students?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>18. How much can you use a variety of assessment strategies?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>19. To what extent can you provide an alternative explanation or example when students are confused?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>20. How much can you assist students to do well in class?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>21. How well can you implement alternative strategies in your class?</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
</tbody>
</table>
APPENDIX C

ADVANCED EMAIL NOTICE SENT TO ALL STUDY PARTICIPANTS.
To: Study Participant
From: Doug Younger (xxxxx@uark.edu)
Date: October 3, 2011
Subject: Participation Request for Upcoming Doctoral Survey

Dear Career and Technical Education Faculty Member,

Within the next few days, you will receive an email request containing a link to an electronic survey. This survey is being conducted to examine relationships between teaching efficacy and various career and technical education faculty characteristics. You have been selected to participate in this study because you are a full-time career and technical education faculty member.

This survey is a part of the doctoral dissertation requirements in Workforce Development Education through the University of Arkansas.

Participation in this study will be voluntary. All information will be kept confidential to the extent allowed by law and University policy.

If you have questions or concerns about this study, you may contact me at xxxxx@uark.edu or David Deggs at (xxx) xxx-xxxx or by e-mail at xxxxx@uark.edu. For questions or concerns about your rights as a research participant, please contact Ro Windwalker, the University’s IRB Coordinator, at (xxx) xxx-xxxx or by e-mail at xxxxx@uark.edu.

I would greatly appreciate you taking a few minutes to complete the electronic survey.

Thank you in advance for your help.

Sincerely,

Doug Younger
Doctoral Candidate - Workforce Development Education
University of Arkansas
APPENDIX D

EMAIL NOTICE SENT TO ALL PARTICIPANTS.
To: Study Participant  
From: Doug Younger (xxxxx@uark.edu)  
Date: October 5, 2011  
Subject: Request to Complete Teaching Efficacy Survey

Dear Career and Technical Education Faculty Member,

Teaching efficacy is a teacher’s belief in his or her capacity to be able to organize and accomplish a specific teaching task. Career and technical education faculty are hired as subject matter experts often with strong industrial background and little professional teaching development. Levels of teaching efficacy may affect teaching performance.

The study you are being asked to participate is being conducted to examine relationships between teaching efficacy and various career and technical education faculty characteristics. You have been selected to participate in this study because you are a full-time career and technical education faculty member.

The following link will lead you to an electronic survey containing questions about your characteristics and levels of teaching efficacy:


This survey will be active until October 21, 2011. Please respond by that date.

Participation in this study is voluntary. All information will be kept confidential to the extent allowed by law and University policy. Please use the following tracking code number in the first question on the electronic survey. The tracking number will be used only for follow-up purposes with non-responders.

Tracking code number: xxxxx

If you desire to be informed of the results of this study, please reply to this email. If you are not a full-time career and technical education faculty member, please enter the tracking number on the survey and leave the survey uncompleted.

If you have questions or concerns about this study, you may contact me at xxxxx@uark.edu or David Deggs at (xxx) xxx-xxxx or by e-mail at xxxxx@uark.edu. For questions or concerns about your rights as a research participant, please contact Ro Windwalker, the University’s IRB Coordinator, at (xxx) xxx-xxxx or by e-mail at xxxxx@uark.edu.

Thank you for your time and participation in this study,

Sincerely,
Doug Younger  
Doctoral Candidate – Workforce Development Education  
University of Arkansas

76
APPENDIX E

FIRST FOLLOW-UP EMAIL NOTICE SENT TO ALL PARTICIPANTS.
To: Study Participant  
From: Doug Younger (xxxxx@uark.edu)  
Date: October 11, 2011  
Subject: First Reminder of Doctoral Survey

Dear Career and Technical Education Faculty Member,

An email was sent to you last week inviting you to participate in a study exploring teaching efficacy amongst career and technical education faculty.

Please take a few moments to complete the electronic survey if you have not already done so. The electronic survey can be accessed at:


Participation in this study is voluntary. All information will be kept confidential to the extent allowed by law and University policy.

Please include the following tracking number to assist in follow-up with non-responders:

Tracking Code Number: xxxxx

This survey will remain accessible through October 21, 2011.

If you have questions or concerns about this study, you may contact me at xxxxx@uark.edu or David Deggs at (xxx) xxx-xxxx or by e-mail at xxxxx@uark.edu. For questions or concerns about your rights as a research participant, please contact Ro Windwalker, the University’s IRB Coordinator, at (xxx) xxx-xxxx or by e-mail at xxxxx@uark.edu.

Thank you for your participation in this study.

Sincerely,

Doug Younger  
Doctoral Candidate - Workforce Development Education  
University of Arkansas
APPENDIX F

SECOND FOLLOW-UP EMAIL NOTICE SENT TO ALL PARTICIPANTS.
To: Study Participant  
From: Doug Younger (xxxxx@uark.edu)  
Date: October 16, 2011  
Subject: Final Reminder of Doctoral Survey

Dear Career and Technical Education Faculty Member,

An email was sent to you last week inviting you to participate in a study exploring teaching efficacy among career and technical education faculty.

If you have not already done so, please take a few moments to complete the electronic survey. The electronic survey can be accessed at:


Participation in this study is voluntary. All information will be kept confidential to the extent allowed by law and University policy.

Please include the following tracking number to assist in follow-up with non-responders:

Tracking Code Number: xxxxx

This survey will remain accessible through October 21, 2011.

If you have questions or concerns about this study, you may contact me at xxxxx@uark.edu or David Deggs at (xxx) xxx-xxxx or by e-mail at xxxxx@uark.edu. For questions or concerns about your rights as a research participant, please contact Ro Windwalker, the University’s IRB Coordinator, at (xxx) xxx-xxxx or by e-mail at xxxxx@uark.edu.

Thank you for your participation in this study.

Sincerely,

Doug Younger  
Doctoral Candidate – Workforce Development Education  
University of Arkansas
APPENDIX G

APPROVAL LETTER FROM INSTITUTIONAL REVIEW BOARD
MEMORANDUM

TO:       Douglas Younger
          David Deggs

FROM:     Ro Windwalker
          IRB Coordinator

RE:       New Protocol Approval

IRB Protocol #:  11-08-071

Protocol Title: Factors Influencing Teaching Efficacy among Kansas Career and Technical Education Faculty

Review Type: ☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB

Approved Project Period: Start Date: 09/09/2011 Expiration Date: 09/08/2012

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form Continuing Review for IRB Approved Projects, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 800 participants. If you wish to make any modifications in the approved protocol, including enrolling more than this number, you must seek approval prior to implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu.

210 Administration Building • 1 University of Arkansas • Fayetteville, AR 72701
Voice (479) 575-2208 • Fax (479) 575-3846 • Email irb@uark.edu

The University of Arkansas is an equal opportunity/affirmative action institution.
VITA

Douglas L. Younger is a native of Emporia, Kansas, and is the youngest son of Jerome J. Younger and Barbara Redman Younger. He began work on his Doctor of Education degree in Workforce Development Education at the University of Arkansas in Fayetteville, Arkansas, in August 2008 and graduated in December 2011.

Douglas earned a Bachelor of Science in Technology degree in Printing Technology in 1989, a Master of Science in Technology degree in Technical Teacher Education in 1998, and a Specialist in Education degree in Adult Education in 2004 from Pittsburg State University in Pittsburg, Kansas.

He began his professional career in 1989 at TOBEY Fine Papers in North Kansas City, Missouri as a Customer Service Representative and Merchandising Assistant. In 1991, Douglas began his teaching career as an instructor in the Graphic Arts Technology program at the Flint Hills Technical School (now Flint Hills Technical College). In 2003, Douglas returned to Pittsburg State University where he is employed in the Department of Graphics and Imaging Technologies as an Associate Professor.

In addition to his teaching duties, Douglas serves as Faculty Advisor and Fraternal Steward for the Lambda Chi chapter of the Lambda Chi Alpha fraternity at Pittsburg State University. Douglas is a member of the International Graphic Arts Educators Association, International Association of Printing House Craftsmen, and Phi Kappa Phi.