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Pepperdine University
Graduate School of Education and Psychology

POST-SECONDARY CAREER TECHNICAL EDUCATION INSTRUCTIONAL PRACTICES

A dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Education in Educational Leadership, Administration, and Policy

by

Giselle D. Bice

March, 2019

Diana B. Hiatt-Michael, Ed. D. – Dissertation Chairperson

This dissertation, written by

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under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

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TABLE OF CONTENTS

	Page
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
ACKNOWLEDGEMENTS.....	viii
VITA.....	ix
ABSTRACT.....	xi
Chapter 1: Introduction.....	1
Statement of Problem	5
Statement of Purpose	5
Research Questions	6
Theoretical Framework.....	6
Significance of Study.....	8
Definition of Key Terms.....	10
Assumptions.....	12
Delimitations.....	13
Chapter 2: Review Of Literature.....	14
Search Strategy	14
Introduction.....	14
History/Background of Career Technical Education	15
Andragogy.....	19
California Standards for the Teaching Profession.....	23
Career Technical Education Instruction.....	25
Career Technical Education Instructor Preparation.....	39
Career Technical Education Classroom Observtions	52
Chapter Summary	58
Chapter 3: Methodology	60
Research Questions	60
Setting	61
Population	62
Design	64
Data Source.....	65
Human Subject Considerations.....	70

Chapter 4: Analysis of Data and Findings	72
Introduction	72
Sample Demographics	72
Description of Data Analysis.....	74
Triangulation of Data	75
Findings.....	76
Summary of Major Findings	95
Chapter 5: Summary, Conclusions, and Recommendations.....	98
Summary	98
Conclusions.....	102
Recommendations	112
REFERENCES	115
APPENDIX A: Research Instrument 1: Classroom Observation Checklist	128
APPENDIX B: Research Instrument 2: Classroom Observation Data Collection Form	130
APPENDIX C: Research Instrument 3: Post-Observation Interview Data Collection Sheet.....	132
APPENDIX D: Informed Consent.....	134
APPENDIX E: Research Flyer	138
APPENDIX F: IRB Approval Letter	140

LIST OF TABLES

	Page
Table 1. Summary of Research Questions and Major Themes.....	64
Table 2. Demographic Characteristics of Participants.....	73
Table 3. Certified Nurse Assistant Completion, Certification, and Employment.....	77
Table 4. Pharmacy Technician Completion, Certification, and Employment Data.....	78
Table 5. Participants' Observational Frequency Scores.....	80
Table 6. Frequency Ranking of Instructional Behavior by Area.....	81
Table 7. Instructional Behavior: Equipment.....	81
Table 8. Summary of Research Questions and Major Themes.....	97

LIST OF FIGURES

	Page
Figure 1. Framework for vocational teacher education.	41
Figure 2. Research questions aligned to data sources.....	66
Figure 3. Data source triangulation.....	76

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Dei Gratia

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ABSTRACT

Although the current public education system's vision of college and career readiness is creating a substantial space for career technical education (CTE) in schools, little has been done regarding researching the current state of career technical education and adult learners. As colleges become further impacted by fiscal constraints, adding additional years for the completion of any post-secondary degree, a need exists to reassess the state's adult school CTE programs as an essential partner in post-secondary education. This study aimed to elucidate instructional best practices of CTE instructors within a public school setting as a foundation for further research in this area.

Limited extant research is available on instructional practices of post-secondary CTE instructors. Therefore, a variety of data was collected by the principal and assistant researcher. Using two observational tools, fifteen post-secondary CTE instructors were observed twice during instruction. Following the observations, participants were interviewed to obtain an accurate narrative of the observations and their instructional practices. All potential instructors agreed to participate, sharing a collective enthusiasm for the acknowledgement of their contribution to post-secondary education.

Because the research was exploratory in its design, research questions were developed to create a baseline for future research in instructional practices of post-secondary CTE instructors. Coding and statistical analysis were performed for all data sources, with a triangulation of data conducted for one of the observational tools with strong trends reported.

The principal theme comprises the classroom's orientation for learning. The most frequently observed instructional behavior from the observational checklist was from the classroom environment category. Observational notes aligned to Malcolm Knowles's Adult Learning Theory showed the strongest principle of Orientation to Learn during observations.

Finally, all participants shared in their interviews their best instructional practices, which involved hands-on modeling and learning in an environment modeled after current industry standards.

Recommendations derived from the study's findings include maintaining collaboration with local educational agencies for funding of equipment and facilities, further research into Adult Learning Theory regarding post-secondary CTE and providing continuous professional development for instructors in both andragogy and their professional industry to maintain relevance.

Chapter 1: Introduction

Countries producing the most important new products and services can secure the best global economies, affording lucrative salaries to their employees. Creating these most important new products and services relies on sustaining a worldwide technological lead, year in and year out, in industriousness and in the emerging industries that novel technologies generate.

Nevertheless, this diversity of leadership does not depend on technology alone. Leadership hinges on a deep vision of creativity that is constantly renewing itself, and on a range of talent that can envision utilizing tools that have never been previously available.

Preeminent organizations will search for the most skilled, inventive, and imaginative individuals, and will compensate accordingly. This does not apply only to top experts, but also to the overall workforce. Proven competencies in English, arithmetic, innovation, and science, in addition to writing and history, will be critical. Competitors in the contemporary workforce must be imaginative and inventive, self-trained, ready to learn and function as an individual apart from or as part of a group and possess the requisite adaptability to adjust rapidly to continuous changes in the labor market as the economy continues its dynamic pace of change.

While countries outside of the United States are progressively accessing more education, their youths are benefiting from the advantages of improved education. To address the need for internationally comparable evidence on student performance, the Organization for Economic Cooperation and Development (OECD) launched a triennial survey of 15-year-old students around the world, known as the Program for International Students Assessment (PISA). Science, reading, mathematics, and collaborative problem solving constituted the focus of the assessment (OECD, 2016). Based on results from the 2015 PISA assessment (OECD, 2016), U.S. students scored at the midpoint to low in each of the three student achievement studies in literacy,

mathematics, and science. School remediation rates are high, and U.S. businesses report that today's youth lack the essential knowledge and skill sets required for the contemporary workforce. This supports current research that two-fifths of U.S. high school students graduate without the preparation necessary for beginning a career or finding success at a college (www.theeducationaltrust.org).

According to the Education at a Glance Report published by the OECD (2016), the US spent more than \$26,000 per post-secondary student, the most reported, at almost two-fold the OECD median of \$13,957. Post-secondary education has grown, with 41% of the total population having post-secondary schooling. Yet, due to a slow rate of completion, the US has fallen behind numerous countries. The annual rate between the growth of students completing post-secondary education from 2000-2011 is 1.4%, the lowest rate within the OECD. While the US's relative position in the world's ranking of premier education has diminished, the structure of the worldwide economy has been advancing at remarkable speed. Global businesses have access to an overall workforce comprised of those who do not need to move to participate in work groups that are genuinely worldwide. U.S. laborers at each skill level stand in direct competition with specialists globally.

In response to the need for the U.S. education system to address the gap in preparing its students for the contemporary global economy, the National Governors Association (NGA) assembled educators in 2009 to construct educational standards to address both college and career readiness for U.S. students. The initiative's purpose is to "provide a consistent, clear understanding of what students are expected to learn, so teachers and parents know what they need to do to help them" (Common Core State Standards Initiative, *Read the Standards*, 2015, p. 1). Furthermore, "the standards are designed to be robust and relevant to the real world,

reflecting the knowledge and skills that our young people need for success in college and careers” (Common Core State Standards Initiative, *Read the Standards*, 2015, p. 1), with the purpose to successfully prepare U.S. students to compete in a global economy. The Common Core State Standards Initiative was created for: (a) expanding the premier standards in the US; (b) observing high-performing nations around the globe; and (c) considering the extant research regarding capacities that students must possess to be productive in school, a profession, and life (Common Core State Standards Initiative, *Read the Standards* section, para. 1, 2015).

In 2017, the State of California needs one million more college graduates than our current education system can produce to fill the anticipated workforce (Baldassare, Bonner, DeFever, Lopes, & Shrestha, 2014). To meet the demand, California schools should take proactive measures to improve students’ ability to complete various licensures and degrees other than traditional college degree programs. It is critical for schools to produce students who possess the essential workforce skills so that they are prepared to compete in today’s competitive global economy. With the high-school-to-college pipeline currently fragmented by budget cuts, which leads to more time to complete any degree or certificate offered, the opportunity currently exists to reexamine the state’s adult school career technical education (CTE) programs as a necessary partner in post-secondary education for the global student of the 21st century. Students can earn nationally recognized licensures or certifications leading to careers in their desired fields of study within a year. This option is relevant for the student pursuing a college degree or sustainable career. Adult CTE offers opportunities to prepare adults with essential knowledge and skills to further contribute in their lives and communities. These programs ensure that adults have access to the training and education requisite to compete in today’s global economy. Adult students can

access these resources through local school districts, community colleges, community or faith-based organizations, volunteer organizations, and state agencies.

California adult schools are required to offer programs serving the local community through courses, such as the following: adult basic and secondary academics; English as a Second Language; citizenship preparation; CTE; adults with disabilities; parenting, family, and consumer awareness; and older adults. CTE provides various career-training programs necessary to meet the preparation and training needs of industries. Established within designated industry career clusters, these programs encompass both academic career training and workforce-readiness skills, culminating in recognized certifications in occupations with prospective high growth and wages (California Department of Education, Adult Education, CalEdFacts, 2014).

From 2013–2015, Assembly Bill 86 (AB86) outlined a consortium to establish education and workforce service plans for the adult population. The consortium was comprised of regional K–12 school districts, community college districts, post-secondary programs, and additional vested community partners. Assembly Bill 104 (AB104) contains a section on the enactment of the Adult Education Block Grant that represents the actualization of the development initiated with the passage of AB86 in 2013. This measure includes a segment defining California’s expected outcomes for the new Adult Education Block Grant program. There are seven program areas identified by AB104 as sustainable for Adult Education Block Grant funds (a) high school diploma or equivalent, (b) ESL and citizenship, (c) those entering or reentering the workforce, (d) adults with disabilities, (e) child development, (f) CTE, and (g) pre-apprenticeship training that is approved by the California Division of Apprenticeship Standards.

Statement of Problem

Since the United States was encumbered by the Great Recession, as college graduates were not guaranteed positions related to their coursework, an increasing number of students have turned to CTE courses and programs. CTE programs have also been a viable option for high school graduates looking to directly enter the workforce and for adults transitioning into a new career. However, there is limited research regarding/surrounding defining desirable practices for such post-secondary CTE programs.

Statement of Purpose

The purpose of this exploratory mixed-methods research study was to examine the instructional best practices of post-secondary CTE instructors within one public, post-secondary-school setting. Within professional medical parameters, Mold and Gregory (2003) defined best practice research as a “solution-focused approach to the investigation of the processes of clinical care that appears to be effective and efficient” (p. 134). Parallels can be drawn in education with a solution-focused approach to the investigation of instructional best practices that are both effective and efficient, as evident by standardized assessments leading to recognized certifications. Mael’s (2000) book *Lifelong Learning at Its Best: Innovative Practices in Adult Credit Programs* delivers a national collection of proven learning program models for adult learners and educational strategies. Furthermore, to illustrate instructional practices of lifelong learners, data from a national study on behalf of the Commission for a Nation of Lifelong Learning are utilized (Mael, 2000). Although templates are supplied for adult best practices, additional research is necessary to determine what best practices specifically occur in CTE classes for adults.

Research Questions

The present study was guided by the following four research questions (RQ):

- RQ 1: What are the licensure pass rates among students attending post-secondary CTE courses at the ABC District Adult School?
- RQ 2: To what extent do CTE instructors at the ABC Adult School follow known best practices as conceptualized by Bice and Gatlin (2008) in the Classroom Observation Checklist?
- RQ 3: To what extent do career technical education instructors at the ABC Adult School follow known best practices, as conceptualized by M. Knowles (1984) as the six principles of Adult Learning Theory?
- RQ4: What do CTE instructors at the ABC Adult School describe as their best practices as conceptualized by the California Standards for the Teaching Profession (CSTP, 2009)?

Theoretical Framework

Frameworks based on constructivism, like andragogy, stress the importance of mutual planning among the learner and instructor, analysis of the adult learners' interests, a cooperative learning climate, successive tasks for completing objectives, and learning objectives based on an analysis of the learner's interest. The association between constructivism and andragogy consists of the individual application of the material, inclusion of the learner, and engaging in a deeper comprehension of content. The practice of andragogy is based on a set of six assumptions about adult learners that was proposed by M. Knowles (1984):

1. The need to know
2. The learner's self-concept
3. The role of the learner's experience

4. Readiness to learn
5. Orientation to learning
6. Motivation

Even though adults are willing to work diligently to learn, andragogy has failed to garner as much attention as pedagogy. Contemporary education's framework is designed around pedagogy. M. Knowles stated:

because the institutional forms for the education of adults that have survived are for the most part attached to institutions established for other purposes, these programs tend to be perceived as secondary or peripheral functions in their respective social systems. (1988, p. 53)

The California Standards for the Teaching Profession (CSTP, 2009) offer a shared language and a vision by which all teachers can outline and advance their teaching practice. The intent of the standards is to guide instructors as they grow, improve, and extend their instructional practice.

The California Standards for the Teaching Profession are six standards for the teaching profession in six inter-reliant areas of instruction, with each standard having additional subcategories. The six standards (CSTP, 2009) are:

- engaging and supporting all students in learning,
- creating and maintaining effective environments for student learning,
- understanding and organizing subject matter for student learning,
- planning instruction and designing learning experiences for all students,
- assessing Students for learning,
- developing as a professional educator.

Significance of Study

Theoretical significance. Adding to M. Knowles (1984) and the California Standards for the Teaching Profession (2009), in conjunction with limited extant literature on current CTE, this study may serve as a starting point for contemporary educators in understanding the observable behaviors of successful career technical instructors, as well as provide a background of the importance of integrating industry-trained professionals within various educational settings in a blended approach of constructivism and andragogy. The U.S. education system is transforming to compete with an international economy through global learners. Career pathways are implemented throughout California, with the goal of students earning a diploma in conjunction with career-readiness skills and certifications. There needs to be a theoretical framework developed for post-secondary CTE that blends adult learning theory and research-based instructional practice.

Elucidating the best practices of career technical instructors may provide specific tenets that instructional leaders can share with new instructors and industry professionals engaging in educational partnerships. In addition, outcomes may provide the foundation for a research-based matrix used to properly evaluate CTE programs developed by industry and educational professionals.

Methodological significance. In supporting this exploratory mixed-methods research design to potentially uncover the instructional practices of CTE instructors at an adult school campus, observational tools were designed or modified to best capture both quantitative and qualitative data. The tools for evaluating the instructional practices of CTE instructors are as follows: (a) Classroom Observation Checklist, (b) Instructional Observation Data Collection

Form, and (c) Post-Observation Interview Questions to guide interviews with instructors within the framework of the California Standards of the Teaching Profession.

Practical significance. The significance of this study constitutes an effort to define the instructional best practices of successful career technical instructors. CTE instructors possess extensive industry experience developed through proven careers, drawing from these experiences to inform instruction with little to no formal instructor training. This research may shift the perception of CTE instructors as ones who can provide effective instruction that will provide material benefits to adult learners. Advocates of CTE may benefit by this research as its purpose was to identify instructional strategies frequently engaged by post-secondary CTE instructors during instruction. The instructors sampled had limited exposure to pedagogy or andragogy, as their instructional practice is drawn from their industry experience, not through courses or professional development in pedagogy or andragogy. Thus, the post-secondary CTE instructor's instructional practices can be viewed as instinctive.

The mixed-methods approach may lend credence to the value of CTE as a partner in a learner's journey, regardless of age. As the current U.S. public education system is concentrated on developing career- and college-ready graduates, identifying possible instructional best practices will benefit all schools implementing career pathways. Findings from this exploratory mixed-methods research can drive change in what is being offered as professional development at the site level for continuous program enrichment in both traditional and alternative educational programs. There may also be the opportunity to improve student preparedness for licensure and job placement with educational leaders supporting the engagement of those instructional strategies most frequently implemented.

Definition of Key Terms

Adult education. Public, post-secondary programs serving adult learners, which include: (a) high school diploma or equivalency; and (b) CTE leading to industry-recognized certifications or licensures outlined in the California Education Code (EC) sections 52501, 52502, 52503.

Adult learner. Students enrolled in a vocational, occupational, or CTE program preparing students for a designated state or national licensure within their field of study and preparation, as outlined in California Education Code (EC) sections 52501, 52502, 52503.

Best practices. Strategies or methods commonly acknowledged as better than other options due to higher measurable outcomes or due to becoming the standard methods by research (Mael, 2000).

Career technical education. Academic and career courses providing practice through internships, job shadowing, and industry-certification opportunities for both secondary and post-secondary students as outlined by the California Department of Education Adult Education program overview (2018).

Classroom. A location where classes are taught within a content area. This can be at a school or work-based location.

Instruction. The use of various teaching strategies to achieve learning objectives intended for gauging and measuring student learning (Darling-Hammond, Newton, & Wei , 2010).

Instructional practices. Teaching practices outlined in the California Standards for the Teaching Profession (2009) which include six interconnected areas of instructional practice. The six standards are:

- engaging and supporting all students in learning,
- creating and maintaining effective environments for student learning,
- understanding and organizing subject matter for student learning,
- planning instruction and designing learning experiences for all students,
- assessing students for learning,
- developing as a professional educator.

Learning environment. A location or area within a school or work site best appropriated for student learning based on content and curriculum.

Post-secondary CTE. Programs of study leading to industry-recognized certifications or licensures through a blend of theory and hands-on training within the designated content area.

Post-secondary CTE instructor. A CTE instructor who holds a designated subject teaching credential, which permits instruction within “the subjects named on the credential in Grades 12 and below, and in classes organized primarily for adults, in technical, trade or vocational courses, which shall be part of a program of technical, trade, or vocational education” (State of California Commission on Teacher Credentialing, 2006, p.1). The holder may serve as a substitute in any professional class for up to 30 days for any one educator during the school year.

Post-secondary vocational education. Vocational education at the non-baccalaureate post-secondary level primarily focuses on providing occupationally-specific preparation. Post-secondary-level occupational programs generally parallel program areas identified at the secondary level: “agriculture; business and office; marketing and distribution; health; home economics; technical education (including protective services, computers and data processing, engineering and science technologies, and communication technologies); and trade and industry” (Levesque et al., 1995).

Vocational education. The Perkins Act defines vocational education as “organized educational programs offering a sequence of courses which are directly related to the preparation of individuals in paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree” (Levesque et al., 1995, p. 2). While vocational education is delivered at both the secondary and post-secondary levels, its focus differs somewhat at each level (Levesque et al., 1995).

Assumptions

This study rests upon the following seven assumptions:

1. Current licensure pass rates among students attending post-secondary CTE courses at the ABC District Adult School are available.
2. CTE instructors at the ABC Adult School follow known best practices as conceptualized by Bice and Gatlin (2008).
3. CTE instructors at the ABC Adult School follow known best practices of andragogy, as conceptualized by M. Knowles (1984).
4. CTE instructors at the ABC Adult School can describe their best practices as conceptualized by the California Standards for the Teaching Profession (2009).
5. Observations and interviews will allow the researcher to meaningfully capture the instructional practices of CTE instructors.
6. During observation, participants will act in a manner that exemplifies their usual classroom behavior and their usual instructional practices.
7. Participants will be honest and truthful in their interview responses.

Delimitations

This study was delimited to CTE instructors who were employed at one site during December 2016 through February 2017 within the geographical region of Southern California. In addition, for data collection, the study was restricted to the timeframe of January through February 2017. Because the data was to observe instructional practices, the study was delimited to the work in their classrooms during the observational time. Finally, this study was limited to the observational capabilities of two instructional supervisors.

Chapter 2: Review of Literature

Search Strategy

For this literature review, the following online databases and search engines were used: Academic Search Complete, ERIC, Google Scholar, Sage, Wiley Online, Elsevier, and WorldCat. The key search terms used to search these databases alone and in combination included the following: *adult education, adult programs, andragogy, educational practices, educational strategies, educational trends, lifelong learning, models, national surveys, vocational education, post-secondary education, professional development, instruction, career technical education, and student-centered curricula.*

Introduction

Moore (2015) defined CTE as a program of study that involves many years in which students learn both core academic knowledge and technical and occupational knowledge to help them form a pathway to a post-secondary education and career. The programs support students to develop the academic and technical skills, knowledge, and training necessary to be successful in their future careers and to become lifelong learners. Teacher education and the acquisition of teaching skills should be an integral part of the training of vocational education teachers, as well as academic K–12 and post-secondary teachers.

However, vocational education teachers are often hired based on vocational experience, and not completion of nor in combination with teacher education training (Lazaros & Rogers, 2006). In addressing this gap between traditional and career technical teacher preparation, Lazaros and Rogers (2006) reported that a theoretical framework is needed to support vocational education teacher education, changes in the role of vocational instructors, and legislation regarding vocational instructor selection or certification.

Extensive research exists related to K–12 teacher education for many school subjects, including a wide spectrum of instructional practices (Darling-Hammond et al., 2010). The literature review comprises four focus areas. The first area to be covered is andragogy, the teaching methods for adults. The second is teacher-training preparation. The third is literature used by the author to create a conceptual framework around teacher training. The fourth concerns how to conduct and analyze classroom observations.

Historical Background

Federal legislation and philosophies about the nature of vocational training and education are two critical factors that influence vocational education. This section of the literature review focuses on these two factors and their roles.

The existence of career and technical education in the US began with the Smith-Hughes Act of 1917, which mandated the federal government support public vocational education. This government support for vocational and technical training's scope and direction has continued to today; however, although it continues to improve vocational training programs, the money spent on vocational education is still miniscule compared to the amount spent on college-preparatory goals created by recent federal policy (Lynch, 2000). The main force that originally contributed to the increase in vocational training and subsequent passage of the Smith-Hughes Act was the nation's economic response to industrialization. With the reduction of industrial jobs and growth of knowledge work, vocational education has been left underfunded. The original vision of vocational training was to create courses in varying fields of agriculture, home economics, trade, and industry as a means to produce skilled workers who could enter the workforce in positions in which a bachelor's degree is unnecessary (Scott & Sarkees-Wircenski, 1996).

The Smith-Hughes Act redefined vocational training as a distinct “system” of education that comprised separate state boards of vocational training. Even the funding for vocational training, along with its areas of study, teacher preparation programs and certifications, were categorized separately. As a result, the vocational programs were isolated from traditional high school education programs (Hayward & Benson, 1993).

Despite the changes in separation of vocational and high school education, research has supported the shift of education to meet global demand. Biggs, Hinton, and Duncan (1996) discussed the need for major changes in the field of education so that a quality workforce can support the global demands of the 21st century. Several teaching approaches have entered market to support this cause, and they have assumed a greater role in career and technical education. Some of these courses, as identified by Biggs et al. (1996) are technical preparation programs (also known as *tech prep*), which represent vocational programs that are completed in four years. Two years are housed within a secondary-school setting, which precedes two years in a training program, apprenticeship program, or internship. Technical preparation curriculum includes math, science, communication, and technologies culminating in a skill certificate or associate degree.

Integrated curriculum refers to the integration of academic or theoretical coursework and career technical or practical courses into a single course and curriculum to improve career and technical education (Lynch, Smith, & Rojewski, 1994). The focus of this type of course is to merge the best practices and curricula of both theoretical and practical courses into an integrated program available to high school students. Cognitive- and work-based apprenticeships mean learning by doing. This method constitutes learning under the guidance of a mentor (Smith & Rojewski, 1993). This course requires transformation of a workplace into an integral part of the

education system. Additionally, coordinated school-based learning and supervised work experiences are possible. For example, career academies have been designed to prepare students of small cohorts for the fields such as aviation technology, environmental technology, horticulture, or other highly skilled work. Here, the career-oriented education departments work collaboratively with other departments to integrate academics with work-based skills, whereby these skills connect to a particular industry. The course does not provide limited, job-based skills, but rather produces graduates who are academically and technically proficient in a specific field.

In school-based enterprises, the school engages students in activities that produce goods or services that are sold in the market. The activities are coordinated by working within an industry, similar to an internship or job-shadowing. A second option is for teachers to model the activities within the classroom, under fewer restrictions. Examples of these kinds of programs include a student-run canteen, stores, print shops, and retail shops. Cooperative education consists of part-time jobs connected to classroom knowledge. These are mainly paid jobs with coordinated and supervised secondary academic programs. Students agree in a contract with the employers to perform the job tasks, and they understand the duty of the supervisor and teacher.

Biggs et al. (1996) detailed an approach that requires novel methods of pedagogy to accommodate teachers' emerging roles as collaborators, facilitators of learning, and lifelong learners; familiarity with the workplace; and the ability to make school settings reflect workplace environments (Cotton & Hart, 2003; Naylor, 1997). The presence of these innovative practices requires career and technical teacher-educators to incorporate relevant aspects of these new practices into their pre-service and in-service programs.

Assembly Bill (AB) 86, Chapter 48, Statutes of 2013, established the California Career Pathways Trust into state law, and in 2014 added to California Education Code, sections 53010 through 53016. The California Career Pathways Trust’s purpose is to provide funding to “motivate the development of sustained kindergarten through grade 14 (K–14) career pathways programs that connect businesses, kindergarten through grade 12 (K–12) schools, and community colleges together in order to better prepare students for the 21st century workplace” (CCPT Frequently Asked Questions, 2017, para.1). In 2013, Ventura County established a consortium, VC Innovates, to apply for this competitive career-readiness grant. Ventura County’s consortium includes the Conejo Valley, Fillmore, Moorpark, Ojai, Oxnard, Santa Paula, Simi Valley, and Ventura Unified School Districts, in addition to the local community college district. The consortium also includes the Simi Valley and Conejo Valley Adult Schools, Ventura Adult and Continuing Education, and the Ventura County Office of Education. In the first round of funding, the consortium received \$13.2 million, and \$10.2 million in the second round (Morse et al., 2015).

The California Department of Education defines alternative schools as “a different structure, learning philosophy, or academic emphasis to accommodate different student requirements, interests, and learning styles” (Alternative Schools & Programs of Choice Summary, 2018, para. 2). In addition, adult education is regarded as providing adult learners with the opportunity to earn a “high school diploma, general education diploma (GED), learn about jobs, learn to speak English, and learn how to become a U.S. citizen” (Adult Education, n.d, para. 1). Both public education programs allow flexibility within the instructional setting to employ alternatives that include, but are not limited to, charter, independent study, online learning, and community-based or CTE training.

Although California offers numerous teacher preparation programs, most are structured for the seat-based, traditional instructional setting of elementary and secondary schools, leaving a gap in teacher training for alternative educators. This gap has become evident with California's adoption of two educational initiatives based on career-readiness: Common Core State Standards (CCSS) in 2009, with its objective being to "ensure students graduating from high school are prepared to take credit bearing introductory courses in two- or four-year college programs or enter the workforce" (Common Core State Standards Initiative, para. 3, 2015), and AB104, formerly AB86, which established the California Career Pathways Trust Grant. In supporting the collaborative career-readiness initiatives of elementary, secondary, and post-secondary educators, the opportunity exists to formally collect and analyze data of current instructional best practices of post-secondary career-technical education instructors.

Andragogy

The science of adult learning is andragogy (M. Knowles, 1990). In postsecondary education, a difference exists between the traditional education student, and the student who enters directly into career technical training or older adult. Initially defined as "the art and science of helping adults learn," (M. Knowles, 1980, p.135) in *The Modern Practice of Adult Education*, M. Knowles further defined andragogy as an alternative to pedagogy; a learner-focused approach for people of all ages. Pedagogy can also be thought of as "teacher-centered or directed" learning, and andragogy as "learner-centered/directed." (M. Knowles, 1980, p. 135).

M. Knowles (1984) differentiated between children and adult students by explaining the difference in the terms pedagogy and andragogy. Both words have Greek roots, in which the suffix *agogus* in Greek means *leader*. The *paid* as the root of *pedagogy* means *child*, and the *aner* of *andragogy* means adult. Thus, andragogy means *adult leader*. Both words point to the

existence of learning differences between adults and children. A significant difference between pedagogy and andragogy involves the inappropriateness of teaching adults from a pedagogical perspective. M. Knowles (1980) believed that the biggest difference of learning between youth and adults is that the adults are more self-directed. He stated that adults are ready and oriented to learn, and they are experienced. Kidd (1973) asserted that the requirements for adult education are different because of the role of experience, as it is the optimal source of a learning objective for an adult learner. He further proposed that adult learners are also goal-oriented. Knox (1977) concluded that without much difference in career technical or traditional education, an adult will learn with an orientation towards the application of knowledge to achieve more competence.

Despite over forty years of publications, andragogy has failed to garner as much attention as pedagogy. Contemporary education's framework is designed around pedagogy. M. Knowles (1988) stated that "because the institutional forms for the education of adults that have survived are for the most part attached to institutions established for other purposes, these programs tend to be perceived as secondary or peripheral functions in their respective social systems" (p. 53).

M. Knowles (1984) proposed a model for career technical training for adults in online learning as a part of andragogy that would not be associated with pedagogy. The first parameter is to establish an environment that is conducive to adult learning. Second, a structure is designed that allows participative planning; and third, the learning requirements of adults are defined. The fourth parameter is to create the learning objectives of the course, followed by the design activities that emphasize learning; and fifth, all the created activities are implemented. Finally, the last parameter is to reevaluate the learning needs of the adult learner.

Concerning the first parameter, adult learners are engaged when there is an environment that is conducive to adult learning in their selected field of study. This environment serves both

work and human purposes. Interaction of work and human purposes ensures a higher degree of learning in the organization (M. Knowles, 1980). Thus, it can be asserted that an organization is not there just to provide organized learning activities, but also to create an environment that facilitates learning. M. Knowles suggested that an organization should create policies with the intention to document and encourage adult learning.

Second is creating an organizational structure that reinforces participative planning. The organization should allow participative communication between faculty, administrators, and students through various committees or similar bodies. The problem is that, in most cases, adult learning is designed pedagogically, and subsequently training and learning are less effective than they could be. Although adult learning is not promoted through andragogy, it is possible for individual education systems to utilize andragogy as an increasing number of adults come forward to learn.

The third parameter is to diagnose needs from the perspective of both instructor and learner. In addition, the career technical perspective must be considered through asking questions of adult students and industry experts, and by observing those working in the field or industry while performing their duties. Because an adult's needs differ from a child's needs, addressing the differences in an adults' needs are essential for educators in the field of andragogy to make valid contributions to understand the learning requirements of adults, including those that extend beyond the job role or training. The fourth parameter is to formulate the learning objectives of the course. Once the needs are established in the third parameter, the enabling behavior is employed to formulate the learning objectives. Learning objectives are in the form of a hierarchy designed to achieve the desired knowledge and skills.

The fifth parameter is to design activities that support learning. Activities are important for the learning activities to attract and involve adult learners, and invoke their interest, maturity, and experience in the overall learning process. M. Knowles (1980) asserted that adults should not abdicate their responsibilities, but the role of the teacher is to retain the responsibility for promoting the planning through coordinating the process of learning activities. The sixth parameter is to implement all activities designed in the fifth parameter. Implementation of the activities is effective only when the adults participate in the process actively. M. Knowles (1980) suggested that a learning contract can be used to indicate all the commitments towards learning, while identifying the learning resources and strategies. However, regardless of any active utilization of such contract, andragogy prescribes that students are proactively involved in the learning process.

The seventh parameter is to reevaluate the learning needs. Evaluation is one of the key practices in any learning field. Evaluation in andragogy is done to identify the gaps between the desired behavior and the actual performance of the adults. Standard pedagogy is not beneficial in the evaluation of andragogy. As andragogy is related to adults, even though their education is not compulsory, but rather based on interest, they will not accept any change that they perceive to be worthless. Constructive evaluation is ideal for students, but it should constitute a norm for adults.

Andragogy is not simply a synonym for adult education, nor is it the opposite of pedagogy. Andragogy comprises the idea of creating a learning environment for adults that is different from pedagogy. While children's learning is compulsory, adults' learning is not, and thus adults have the option to refrain from education if they feel that the educational experience is not useful. Adult education and its treatment are not just restricted to the educational climate.

Adults are experienced people, which compensates for their lack of specific skills. When the experiences of adults are incorporated in the overall andragogy, it produces the best learning objectives for adults. Adults are more goal-oriented. M. Knowles (1990) asserted that when people learn through their own initiative, they are more concerned about learning and are more serious. Thus, they learn more deeply and permanently (M. Knowles, 1990). Societal factors have varying impacts on students, and thus there is an expected increase in the total number of adult students in career technical courses. Teaching adult learners from a pedagogy perspective is not as efficacious, and thus educators must adapt their practices. In addition, when and wherever possible, the usefulness and helpfulness of andragogy should parallel the practicality of pedagogy. Career technical training mainly helps industry to identify good resources, as they need people who can fully understand the work and succeed in the workplace. Thus, apart from specific skills, people should also acquire general workplace skills.

To procure an adequately trained workforce, educators must adapt to meet the requirements of all learners. Andragogy combined with pedagogy creates a learning environment that produces highly skilled CTE teacher education graduates who are ready for the workforce.

California Standards for the Teaching Profession

The California Standards for the Teaching Profession reflect a developmental view of instruction, which forms an important part of the state's initiative to foster excellence in teaching. The California Standards for the Teaching Profession (2009) supports curriculum that engages students with varied strengths, needs, and learning styles. Teachers are equipped with a wide array of instructional strategies to enable them to address the diversity of the students' educational needs. The coursework entails curriculum development and instructional skills,

which are relevant to the desired occupation. Instructors instill positive attitudes about the teaching profession, interpersonal skills, and effective communication. According to Hirshey, Bremer, & Castellano (2011), career technical instruction prepares teachers to come up with unit plans that incorporate instructional strategies; outcome-based objectives that engage the students in learning, ethical, legal and safety considerations; and appropriate student assessment techniques.

California Standards for the Teaching Profession (2009) calls for an instructor's understanding of the development of students, their families and communities, curriculum, instructional techniques, and resources. Ultimately, this informs instructors how to tailor instruction and evaluate the learning outcomes of students (Feiman-Nemser, 2003). The teacher's expertise and capabilities should be developed over time. Therefore, teachers must actively seek to strengthen their professional skills and perspectives to engage the diverse and dynamic student population in a fast changing and technologically driven world. More support is provided during the early years of a teacher's career as beginning teachers develop at varying rates in their profession, just as students' progress at individual rates. The California Standards for the Teaching Profession advocates for effective mentorship, support, and evaluation during the starting phase of the instructor's career to ensure success in the profession. The policies of preparation programs and school districts and certification bodies are based on realistic standards regarding professional performance and outcomes.

The 2009 California Standards for the Teaching Profession has been tailored to respond to the contextual changes in pedagogy, which address the growing needs of a diverse student body. Key focus has been placed on the revision of the assessment practices and language to come up with an equitable teaching design that addresses the diverse learning needs of students

(Gándara, Maxwell-Jolly, & Driscoll, 2005). California Standards for the Teaching Profession revolves around six inter-related domains that complement each other. These include the development of a professional educator, assessment of students, planning and implementing instruction for all students, creation and maintenance of effective environments for learning, supporting and engaging all students, and tailoring content to address specific needs of the students.

One of the domains of the California Standards of the Teaching Profession emphasizes the use of resources, materials, and technologies to render subject matter accessible to all students. In doing so, instructors should select and implement instructional materials that promote the students' understanding of the key concepts under study. In a world characterized by technological advancement, educators can harness the power of technology to facilitate the conveyance of key concepts in the subject matter area. This approach has been shown to assist the assessment process by providing timely and accurate student data that is the fundamental element for decision-making.

Career Technical Education Instruction

Although CTE is growing across the world, there are limited theorized systems about CTE teaching (Al-Saaideh & Tareef, 2011). To compare and contrast two learning methods, this research will refer to *lecture-based learning* as the traditional instruction that occurs with students behind a desk focused on theory, written descriptions of practice, or illustrations; whereas, *hands-on learning* indicates work occurring in a simulated or actual workplace, with simulated or actual equipment, where visual demonstrations occur in three-dimensional space, and where the learner is required to practice and then demonstrate learned skills. While hands-on learning is often a preferred method for CTE skills, such as the health-care procedures of nursing

or equipment operation for blue-collar occupations, hands-on learning can also include utilizing software programs to create a product or demonstrate a service that could realistically be employed, rather than work that simply constitutes an academic exercise.

CTE teacher education programs have encountered several problems that have led to limited research in the field of CTE teacher education. These problems range from variations in the programs offered, duration of the programs, and financial requirements of these programs. Many have called for reforms in the teacher training of those pursuing education teaching credentials. This advocacy achieved some success, as numerous reports have identified teaching standards through analyzing what teachers should know, do, and accomplish with their knowledge and skills.

Camp (2001) explained that specification translates into concentrating on one area of study at a time. This means that students who pursue specification can retain more than those who generalize. In return, this improves their comprehension, which translates into better performance on tests and exams. Moreover, career and technical subjects are directly related to student interests, inspiring them to work more diligently, which also leads to more optimal performance. Furthermore, some areas are interrelated, which results in the repetition of some principles and enables the students to grasp these principles and apply them in different circumstances. Skills gained in one content area may be useful in augmenting understanding of a different concept in another content area (Camp, 2001).

Having various content areas also supports educators in the efficient delivery of information. Having access to current content enables an educator to concentrate on providing significant information about a specific topic by delving into the relevant details (Threton, 2007), thus eliminating the problem of ambiguity, and ensuring the information reaches the

students with no loss of meaning regarding what the educator intended to communicate. Students having a stronger understanding of concepts translates into increased pass rates and makes it easier for educators to identify areas of strengths and weaknesses among different students. After identifying weaknesses, the educator works together with the student to accommodate them. Addressing students' weaknesses is an effective way to augment their performance.

To frame the discussion of CTE, careers that currently have unmet demands and are projected to increase in the next decade are in the medical field. There is increased need for skilled physician's assistants and nursing workers, including hospice workers, to care for the large baby-boomer population entering retirement. Other fields in which there is increased need for skilled workers include manufacturing and welding, and a recent survey of manufacturing firms by Accenture (ACN) identified a shortage of applicants with requisite manufacturing skills, with only 20% of manufacturing jobs able to be filled by an unskilled worker (Little et al., 2014).

Admissions into post-secondary schools have increased in the US in last two decades. Most of these students attend institutes that offer various CTE training and educational courses at two-year and private colleges. The primary reason for this shift in education is related to changes in job availability and hiring requirements, as most 21st-century jobs in the US do not require a college degree. Little's et al. (2014) research has shown that, out of 147 million jobs in 2005, only 32 million required college degrees. With these jobs comes the need for teachers who can provide career technical courses, and, thus, a new set of jobs become available. Although excitement in the industry exists for these jobs in the medical and manufacturing fields, the problem is the availability of teachers in these industries (Little et al., 2014). The job demand for medical and manufacturing fields has again led to a demand for teachers and a need for focused

coursework for CTE teacher education, and career and technical instructors. Subsequently, a continuous demand exists for teachers, while simultaneously there is uncertainty about the availability of these teachers in the market (Hyde, 2007).

CTE teacher education is continuing to receive support from the masses and the elite due to its ability to prepare people for an appropriate fit in the work world. Nevertheless, many students are moving away from CTE courses towards college. This may be due to prior, unfair stereotyping related to “tracking” in high school, and the backlash that insists that every student prepare to be, for example, a Nobel-winning scientist. Thus, many students are entering the world to work without proper skill sets or the ability to apply the theory of areas such as algebra, geometry, or literature to the essential skill sets of welding, engineering, and technology. (MacFarland, 1985).

Extant literature provides a comprehensive understanding of the nature, scope, and possibilities associated with career and technical education, with an adherence to the history and later development of CTE, training, and development. Kincheloe (1999) accepts the origins of the field, and thus contributes to an understanding of why courses of action in this field have changed over the years. This literature reviews why the purposes of career and technical education have continuously transformed while adjusting for political and economic concerns. Without a consideration of historical facts, researchers in the field of CTE will fail to gather insights into the relationship between post-secondary education and work. As the result of this lack of consideration, a pedagogy has developed that is incapable of resolving the demands of an evolving economy. Reviewing available historical evidence can support the CTE training educator to recognize problems and create resolutions through pragmatic alternatives (Kincheloe, 1999, p. 93).

Career technical programs are known for experiential learning. Because of this, CTE teachers can utilize constructivist and contextual learning approaches. These kinds of approaches have helped learners to integrate novel information and experiences with their previous learning (Ross-Gordon, 2011). This philosophy of experiential learning is popular in mainstream education related to medicine, law, and business (Darling-Hammond, 2006). In CTE, this philosophy has been implemented as a way of putting the theoretical ideas into practical and experiential action. Students are expected to extend beyond the classroom to start and experience community-based experiences in which they can see their part within a community, rather than perceive themselves as just an individual in an isolated classroom (Zeichner & Melnick, 1996).

Research findings support the value of contextualized learning that provides opportunities for knowledge acquisition and construction, practice and reinforcement, in “natural settings”, such as the workplace (Billett, 1993). CTE, which has emphasized apprentice learning, problem solving, and workplace context, supports a constructivist view of learning in its objective to immerse the learner in conditions that are like the environments of their area of study. Although a literature search identified numerous examples of constructivist approaches in such areas as science, mathematics, and English, there were very few explicit references to constructivism in the CTE literature.

According to Parnell (1996), the philosophical position of academic education has been that “learning to know is most important; application can come later” (p. 19), in contrast to the philosophical position of CTE: “learning to do is most important; knowledge will somehow seep into the process” (p. 19). In addition, the behaviorist position (advocated by Prosser) has predominated over the pragmatic and constructivist position (advocated by Dewey) in CTE for

most of the previous century (Lynch, 1997). Johnson and Thomas (1994) noted that “technology education researchers... have shown little interest in cognitive science-based research” (p. 33), although instructional strategies supported by such research include those utilized by technology educators over the years. “The irony for vocational education... is that studies of cognitive development in vocations are leading reforms of general education, but the full import of the theoretical advances is not being applied in vocational education itself” (Stevenson, 1994, p. 8).

Elements of constructivism’s situated learning are evident in recent developments, such as technical preparation, school-to-work, and integrated career technical and academic education. This suggests that constructivist methods are being employed, although not identified as such. Moreover, such barriers as time constraints, administrative procedures, community pressures (accountability demands and standardized testing), and lack of consensus regarding the goals and purposes of education limit seat-based instructors’ ability to implement constructivist approaches (Parnell, 1996). Research confirms that the “focus in teaching and learning should be on the individual’s active construction of knowledge” (Stevenson, 1994, p. 29). The essential role of CTE is “to facilitate construction of knowledge through experiential, contextual, and social methods in real-world environments” (Lynch, 1997, p. 27). Because the focus is on the learner, CTE should be conceptualized as a learning process rather than a teaching process (Stevenson, 1994).

The career technical instructor’s role is not to set tasks, but to organize experiences that allow learners to develop their own knowledge and understanding. Using the methods of cognitive apprenticeship, the instructor is a coach who supplies guidance that gradually decreases as learners become more proficient, and can successfully model, mediate, diagnose, and scaffold the hands- on skills themselves. The learning environment should reproduce the

key aspects of communities of practice, including authentic activities sequenced in complexity, multiple experiences and examples of knowledge application, access to experts, and a social context in which learners collaborate on knowledge construction.

According to Hyerle (1996), constructivist approaches, such as cooperative learning and portfolio assessment, are already being employed in schools, but most of these “create the environment for constructivism but do not center explicitly on how an individual learner constructs knowledge” (p. 15). Hyerle (1996) described how a variety of visual tools, such as brainstorming webs, thinking process maps, concept mapping, and utilizing multimedia through the Internet, support the construction of knowledge. Stevenson (1994) and Billett (1993) advocated assessment of performance in multiple settings, attention to dispositional factors, including learner interests and ways of knowing, and combining constructivist practices with direct instruction for occasions in which presentation of information or theory is essential. In this ever-evolving contemporary world, the goal of constructivist teaching is to develop self-directed, yet interdependent learners who can access and utilize a wide range of cognitive structures to transfer learning to contexts they have yet to encounter.

The shift of education from high school to CTE brings new kinds of students. The job placement opportunities after CTE courses make it possible for adult learning to adapt to that of a CTE instructional setting. The course structure of the career technical courses is very different from two-year or four-year colleges, with less than a year being required for licensure or certification.

According to Wang (2011), instructional strategies or practices are methods and techniques that a teacher can adopt to achieve his or her learning objectives. The practices help the student to walk on the path of an independent learner becoming a strategic learner. The

practices are aimed at equipping teachers to make learning interesting and awakening the students' desire to learn. The focus is on the educational content and methods as well as the environment of the teaching process.

Gregory and Chapman (2013) contested that the instructional practices in adult learning assume that the learners need to know why they are learning something. Adults need to learn through doing. Adults are problem solvers and learn best when the subject is of immediate use. They prefer social interaction, i.e. they want to use life experiences in the classroom and integrate new learned ideas with their existing knowledge. Gregory and Chapman (2013) stated that instructional practices enable students to focus their attention, organize their learning material for more optimal comprehension, and support teachers to supply a suitable platform for strategic learning. The instructional practices can be classified as direct instruction, indirect instruction, experiential instruction, independent study, and interactive instruction. Their classifications are made based on the nature of the activities or the methods that the instructor utilizes to deliver the concept to the students.

A successful instructor of a vocational teacher education course demonstrates strong knowledge and skill in the courses and subjects that are important for their certification levels. Thus, the first factor in the framework, curricula, emphasizes strong content knowledge for teachers. Teachers should demonstrate knowledge of content. The priority of career technical teacher education would be to express the critical need to become an expert in the knowledge of a subject. While learning is important, equally essential for teachers is to understand how to teach their subjects. Teachers should also learn that knowledge and information are not static, but rather continually change and improve. There is necessity for teachers to remain current in their subject areas. Another crucial component for teachers is to evaluate and select different

kinds of resources for teaching. More sources typically bring additional credibility and a wider perspective. Finally, teachers need to understand that they are teaching not only to the present group, but also to subsequent groups of students. Teachers should learn how to design school curriculum that reflects high standards in education.

As a teacher of CTE, one of the critical roles is to ensure that the teacher supports all kinds of student development, including intellectual, social, physical, and personal development. Vocational teacher education courses should ensure that all pupils becoming teachers should understand the importance of the all-around development of students. Teachers should hold high expectations for all students. Teachers need to be certain that learning occurs in both general and content-specific fields.

The physical and social environment is a critical aspect of the teaching practice since it can contribute, or be counterproductive, to the education initiatives of instructors. Instructors should promote social development within a caring community where students are respected and treated fairly. Educators should create both physical and virtual learning environments that enhance learning, encourage constructive interactions among students, and that are intellectually, physically, and emotionally safe. They should also aim to direct classroom routines, norms, and procedures that create a positive climate in which all students can learn comfortably.

The instructor ensures a physical environment where the learners are comfortable, and which is conducive for interactions. The instructor must also respect the learners as people. He or she must show respect for students' feelings and ideas. Gregory and Chapman (2013) argued that the instructor must make efforts to build reliable relationships with the learners that are based on mutual trust and helpfulness. This can be achieved by encouraging participation. He or she should refrain from creating competitive environments.

To help the students gain a deeper understanding of concepts and skills, the instructor should incorporate various strategies and practices in the learning process. These practices should include interactive lectures, student presentations, problem-based learning, laboratory activities, field trips, guided practices, role playing, whole class and small group discussions, brainstorming, debating, and review sessions. These practices are aimed at helping the students to develop the required skills and gain knowledge regarding a concept (Moore, 2015).

Teachers should also be sensitive and alert to the environment of the student. The environment in which a student learns and grows has a direct impact on overall learning. The environment can influence students in numerous ways, and thus teachers need to understand all factors, and how they can influence the lives of students, including learning. A key role of a teacher is to understand how the environment impacts student learning and to ensure that the environment is taken into consideration during instruction. Students' needs are different and diverse; thus, teachers should learn to adapt their work based on the requirements of students. If teachers understand this, it will help to inform and improve their practice. Many teachers fail to take into consideration the needs of not only providing knowledge to adult students, but also to society, including parents. Teachers should establish cordial, productive, and respectful relationships with parents and families.

The instructor should create supportive environments through showing respect for individuals and belief in their potential. This can be achieved by calling trainees by their names, listening to their questions and opinions, being courteous and patient, and assuring them that mistakes are an integral part of the learning process. The instructor can also seek opportunities to validate the learners and encourage them to support each other (Smith, 2014). Teachers are responsible for creating the learning environment. Thus, vocational teacher education teachers

should create an environment that is conducive to learning. An optimal learning environment supports positive social interaction, active engagement in learning, and self-motivation on the part of students.

Environment also creates a learning community for students in which they learn from the teacher and each other. Learning is not solely about gathering information, but also involves organizing, allocating and managing time, spatial activities, technologies, and all other resources efficiently and effectively. One aspect of a learning environment is classroom management. A teacher needs to manage the social dynamics among students effectively while simultaneously facilitating effective instruction. Chaos, noise, and low motivation can disrupt classrooms. A good teacher should be able to identify motivational factors and behaviors while maintaining a productive classroom environment. Effective teachers also understand the importance of culturally responsive activities in the classroom. An effective teacher not only uses knowledge from books, but also accesses various resources to augment the learning and well-being of pupils. Effective learning environments foster interaction, ideas, and learning in the classroom.

Assessments measure the learning of students. Through taking advantage of several assessment tools at their disposal, instructors collect and analyze data pertinent to student performance. The data collected are analyzed to determine the progress of the students. The assessment data are crucial in the establishment of learning goals, differentiation, and modification of instruction. In addition, instructors should create and revise short-term goals to foster student learning. These goals should aim to facilitate understanding of the subject matter. Moreover, they should use their knowledge and experience of the subject matter and student performance index to design and implement instructional strategies over time.

In vocational teacher education courses, teachers learn how to conduct accurate assessments. Numerous formal and informal assessment strategies exist to evaluate students to inform instruction. To assess properly, teachers need to learn how to measure learning and what kinds of assessments are appropriate for various settings. Teachers can also use pre-assessment data to design relevant learning goals for students. An assessment is successful if there is a grading system that is valid, equitable, and relevant to student learning. Because assessment is one of the best ways to show students their progress, teachers should communicate assessment data to students. To maintain a long-term continuous record of student learning, teachers need to keep accurate and up-to-date records of all students, including their assessment scores, daily work reports, work in progress, behavior, and major accomplishments. Through these records, a teacher can identify the strengths and weaknesses of students and guide them through the developmental process to improve and promote growth.

One of the key aspects of the teacher's role is to create and design instructional experiences, based on their knowledge, experience, assessments, and environment. Teachers can create dynamic learning experiences; therefore, they should be well versed in best instructional practices and strategies. Instructional planning should be valuable to both teacher and student, with both engaging in planning as an activity. Instruction design constitutes an integral component of effective teaching. Planning should be performed with careful consideration of all aspects of student learning. Prior knowledge and established prerequisites should inform program goals. The career technical educator program also ensures that teachers can understand rationales behind the curricula choice, so that they can make strategic decisions on the same subject. The feedback of the learner can have a great impact in the planning of a course. Teachers should be flexible and willing to adjust to feedback obtained from students during the

learning process. The instructional strategy should also reflect the diversity of the classroom. A need exists to create instruction that is differentiated from the dynamics of the class, as well as to afford varying roles of support for the teacher. The instructional strategies should facilitate access to diverse content for every student through the individualized and differentiated delivery of instruction. Teachers should employ reliable and appropriate tools, resources, and materials, along with valid technology, to improve the overall quality of course design. Teachers need to value the planning process to create and maintain a successful learning experience for students.

Professionalism should be critical to vocational education teachers as they are teaching professional courses and thus serve as role models for the incoming workforce. Professionalism includes the goal that teachers regularly examine themselves and extend their own knowledge. Professional practices help to create a framework for learning. Subsequently, teachers should be aware of all laws related to the roles and responsibilities of each stakeholder, including students, teachers, and families. Professionalism also mandates that teachers are to follow an established code of conduct as it relates to their practice and district policies. Maintaining professionalism requires continuous improvement and reflection. Similarly, teachers of vocational teacher education courses need to reflect on their teaching and learning to improve their practice. Teachers should take the opportunity to learn from reflection, input from others, and self-monitoring of their career goals and targets. These should be evaluated regularly. Furthermore, vocational teacher education teachers should advocate for the diverse needs of students yet maintain the high expectations of their vocation. As with any teacher, vocational teacher education teachers should be leaders in the class, guide their students in learning, and model best practices for the workplace.

The instructor should emphasize the personal benefits of the training. This can be achieved by having each trainee develop his or her own learning goals and specific actions based on what he or she has learned. The instructor must employ training methods that require active participation. For example, he or she can utilize class presentations, question and answer sessions, and the group discussion method. Another practice involves the use of various teaching methods, since not all people learn in the same way. Learning styles are dependent on personality, intelligence, culture, education, experience, as well as sensory and cognitive preferences. Using a variety of teaching methods will involve all learners. Training methods may include group discussions, skill practice, lectures, case studies, games, structured note-taking, individual coaching, demonstrations, etc. (Wang, 2011).

The instructor should ensure that the course content is coherent and relevant to the needs of the trainee. The learning should meet the trainee's individual learning requirements. The instructor should also deliver immediate and accurate feedback on student practice, to keep the learning more interesting.

These practices involve training adults with a view to helping them to acquire the knowledge and skills that would support them in their careers. The instructor must know the best practices when dealing with adult learners in CTE (Smith, 2014). The instructor exposes learners to novel possibilities of self-fulfillment. The instructor must help learners to understand the relevance of what they are doing and how they can apply it in their present course to build the future that they seek. The instructor helps the learner to understand his or her personal goals and aspirations with an aim to help him or her to reach them. Moore (2015) asserted that the instructor uses techniques to help the learners identify the gap between their present level of performance and their personal aspirations. This helps the learners to recognize the relevance

and importance of the knowledge and skills taught. The instructor needs to involve the learners in a mutual process of formulating learning objectives in which the needs of the learners are considered.

Despite andragogy being used by educators, testing whether teachers use a different style to teach adults has not been researched until recently. Two separate research studies, Beder and Darkenwald (1982) followed by Gorham (1985), studied instruction of adult learners through examining whether instructors of adult learners adjust their instruction and if so, what are the differences between that of adult learners and children. Participants were instructors of adults and children, with data collected by a questionnaire from Bender and Darkenwald (1982) and Gorham (1985), adapting the questionnaire and conducting classroom observations. Both studies reported a difference in teaching styles. Bender and Darkenwald (1982) observed instructors using feedback from their adult learners to adjust instruction, connections of the course to life experiences of the adult learners, and more opportunities for group discussion. Gorham's (1985) research, however, did not confirm the findings of Bender and Darkenwald (1982) with classroom observations. Her conclusions were that the teachers conducted themselves in the same manner with both adults and children. The teachers "spoke often of the responsiveness of adult students and of the quality of discussion in adult classes...[but] these differences...did not appear to influence teachers to adopt the less directive, more student-centered approaches to teaching adults they had reported" (Gorham, 1985, p. 205).

Career Technical Education Instructor Preparation

Teacher learning programs should focus on providing a foundation for continual learning about teaching and developing high quality learning experiences (Booth, 1996). Teachers need to understand that the teaching field is both challenging and complex; understanding this will

help them to analyze the teaching and learning program much better (McIntyre, Byrd, & Foxx, 1997). Instructive coursework and curricula, along with some field experience, will help the pre-service teacher to connect the relationship between teaching theory and practice.

The utilization of field experiences to shift gradually from an academic learning environment to a field-based experience is necessary. This is critical, as the skills developed in academics—reading, writing, studying—are very different from the skills needed to learn through metacognition in the teacher-training program (J. G. Knowles & Cole, 1996). This difference is beneficial for pre-service vocational education teachers since they are professionally trained and are better prepared (Cornford, 2002).

Most educators do not dispute or question the importance of field experiences, especially in CTE training programs (Guyton & Byrd, 2000). At issue, then, is the degree to which field experiences vary among teacher education programs and the impact that such variance has on the effectiveness of early field experiences. In Zeichner, Melnich, and Gomez's (1996) research on the vocational teacher, the narrow focus of most practicums and the lack of attention to school and community contexts often caused students to be unprepared for the full scope of the teaching role. Zeichner et al.'s (1996) findings prompted Ducharme and Ducharme (1996) to espouse the need for research on the structure and content of early field experience programs. Other researchers have expanded upon this issue, asking for a well-developed framework that would allow researchers to develop better questions and methods in an effort to discern the context of the experience (Clift & Brady, 2005, Darling-Hammond, 2006). However, such a comprehensive model focusing on early field experiences in teacher education in career and technical education is an important element that is absent from the literature.

Adams's (2010) research centered on Georgia's CTE teacher preparation. The Georgia Framework provides a description of accomplished teaching using six broad categories of teaching skills and abilities: curriculum and content, knowledge of students and their learning, learning environments, assessment, planning and instruction, and professionalism (Figure 1).

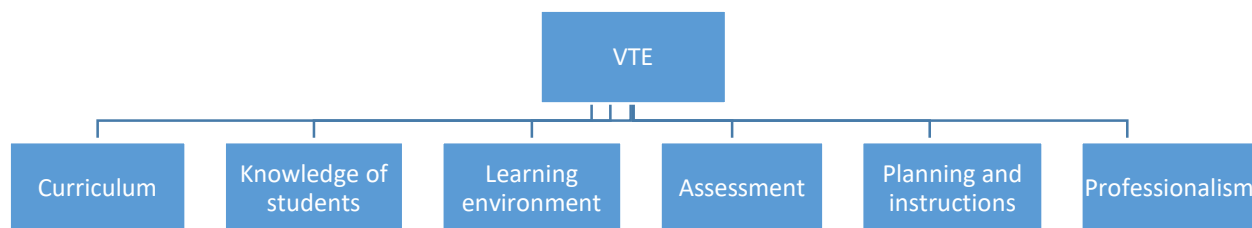


Figure 1. Framework for vocational teacher education.

Findings from this qualitative research (Adams, 2010) support use of the state's framework in CTE teacher preparation. Career education student teachers felt most confident in four of the six categories: (a) curriculum and content, (b) knowledge of students and their learning, (c) planning and instruction, and (d) professionalism (Adams, 2010). Participants felt least confident in the categories of learning environments and assessment due to the lack of application to the designated industry career sector.

Organizing the early field experiences phase requires work on experiences, placement concerns, and documentation for early field experiences. One of the major issues in establishing early field experiences is the need to address the issue of the types and numbers of experiences. Field experience is very important, as it provides a new teacher with the opportunity to observe, with little impact on those being observed. As teacher education programs increase the number of early field experiences, however, there is also a reported decrease in the overall impact of the experience. For example, J. G. Knowles & Cole (1996) observed how field experiences can be too structured, too detached, and too focused to imitate classroom actions. The result is that the

teacher trained after the courses teaches in the same way as he or she was taught during the field experiences, presenting learning that is not real, but instead superficial and procedural.

The core problem in teacher training and education is a major concern of the disconnect between the coursework in the classroom and the field experiences. The best and the most sought-after programs on teacher training always link coursework and fieldwork (Howey & Zimpher, 1989). The primary goals of teacher education programs can be fulfilled if the early field experiences are connected to the method courses (Carter & Anders, 1996). Early field experiences can be easily linked to the foundation or methods of any other courses, connecting them again to the related content. There are some instances in which education is effective to offer standalone experiences, so that they can fulfill the other standards and requirements of the conceptual framework. Thus, a combination of various experiences, including clinical, laboratory, and practice-based experiences can constitute an ideal learning course.

According to McIntyre et al. (1996), placement is one of the crucial components of teacher-training programs and preparation programs. Selection of the cooperating teacher is one of the most critical tasks in analyzing the overall success of the experience (Vertuno, 1995). The primary method to train teachers, as associated with early field experience placement, is to use exemplary sites in which pre-service teachers can emulate the model teachers (Carter & Anders, 1996). Goodland (1990), as well as Howey and Zimpher (1989), argued that it is imperative for the teacher-training program to place students in the best quality programs, rather than ones that are just convenient. After receiving input from both the teacher education program and the school system, a teacher should be placed in a location that is the best fit for him or her (Vertuno, 1995).

There are many reports suggesting that clinical field experiences should be held in a controlled and natural setting, so that the pre-service teachers can be more optimally prepared and can eliminate any existing fear, nervousness, or anxiety (Everhart & Tuner, 1996). The placement should also offer at least a suitable range of teaching approaches and models (Carter & Anders, 1996). The common interest among staff should be to prepare the pre-service teachers and students by pairing them with skilled veteran teachers who can be model for others (Carter & Anders, 1996). In any teacher program, adequate diversity should be maintained (Jaquith, 1995). The pre-service students generally try to follow the teaching style of cooperating teachers, although a major discrepancy will exist if the cooperating teachers do not share the theory and practices discussed in their own training. Thus, this aspect of placement is crucial (Moore, 2015).

Scholars, educators, and professionals agree that early field experiences play a vital role in the development of teachers (McIntyre et al., 1996). Since early field experiences are an important training component, many organizations that serve as accreditation and professional organizations have adapted the early field experiences into their standards for teacher training, curricula, and licensure requirements, which leads us to the topic of standards.

For any teacher training program, there must be a set standard. Although there are varieties of standards from different entities, the two most recognized bodies that accredit courses are the National Council for Accreditation of Teacher Education (NCATE) and the Teacher Education Accreditation Council (TEAC). These two bodies provide different standards for the development of early field experiences. Apart from these two agencies, there are other professional organizations, such as the Association of Teacher Educators (ATE), that have also developed standards of early field experiences, which they claim correspond to the standards of

national accredited bodies (Guyton & Bryd, 2000). These standards are likely to complement the NCATE courses. Other bodies also exist that provide subject-specific accreditation and provide early field experiences. One such organization is the American Association for Agricultural Education. It has developed a statement of the National Standards for Teacher Education in Agriculture. There are numerous other professional bodies and organizations providing such specific accreditation and standards for early field experiences in their respective fields. One of the bodies is the Interstate New Teacher Assessment and Support Consortium (INTASC), which offers standards for beginning teacher development. INTASC focuses on developing beginning teachers regardless of the subject. There are also some subject-specific bodies, such as the National Science Teachers Association (NSTA), which supply standards for early field experience programs for science subjects.

States and institutes of higher education develop many other standards, but most of them generally accord with the national and professional organization standards. Most of the standards developed by states are used to license basic state-level certification (Hurst, Tan, Meek, & Sellers, 2003). In the same way, numerous educational institutes have also developed standards for CTE.

Once the institute identifies the standard, it becomes the basis for the institute's conceptual framework for the teacher education program. According to the national standard for the specific teacher program, the first step is to develop a conceptual framework of the program that creates a vision, mission, objectives, and guides the program, courses, teaching, candidates' requirements, performance, scholarships, services, and accountability of the program ("Professional Standards for the Accreditation of Teacher Preparation Institutions," 2008). The

conceptual framework of the program should agree with other aspects of the program, such as its learning and outcomes.

The quality of teaching is of fundamental importance to students' improvement and learning in schools. California state law dictates the requirements and standards for the career technical preparation of teachers. Standards denote statements that refer to the quality of the program for the continued approval of educator preparation and training. These standards elaborate on the design and quality of the program, and the preparation to teach all students in the California. This paper highlights the best practices of career technical instructors as stipulated in the CTE Model Curriculum Standards and the California Standards for the Teaching Profession.

The first standards for career technical training in California were enacted in 1993. These standards refer to a program of preparation to be completed over a five-year period. The first career technical standards were adopted in 2005 for K–12 teachers. The standards required for the accreditation of instructors are stipulated in the Career Technical Education Model Curriculum Standards. Career technical instruction for teachers in California entails a purposeful, developmentally designed series of coursework that is tailored to prepare all CTE teachers to teach all public-education students effectively (Pundt, Beiter, & Dolak, 2007). This program encompasses nine-semester units of courses coupled with 135 hours of in-depth preparation via a local education agency.

For the learners, the curriculum is divided into sector-specific core academic standards related to each industry sector. The learning method is to a student's career pathway. This way, each student can focus on an occupation. The learning method also gives the students skills that will assist them to make a smooth transition into the workforce. The same standards guide

educators in providing relevant instruction to the students. They will now be required to prepare a curriculum, which leads the students to acquire the goals of the CTE standards. They will also be expected to add application and performance to the academic content. Educators should reflect continuously to augment student learning and achieve the desired outcomes of these standards that will ultimately lead to higher pass rates among the students (Ross, 1989).

These standards enable students to apply their technical skills and academic knowledge, which they acquire through education and the real world. They enable students to gain skills that will assist them in carrying out work-related practices. Examples of these skills are problem solving and communication skills. Job environments require individuals to be proficient in clearly communicating their ideas, thoughts, and plans through electronic, verbal, and written means. CTE standards provide the framework for these skills, in addition to building listening skills and job-specific vocabulary. Students also need to develop problem-solving skills to enable them to identify problems in the workplace and propose thoughtful solutions for them. This involves investigating the cause of the problem prior to coming up with the solution and following up to be certain that the solution is effective. Additionally, students are trained on how to behave ethically and with integrity in work environments (Conrad, 2011).

Career and technical education standards are also intended to assist students in aligning their educational and personal career goals. Students understand the value of education and constantly seek assistance from mentors and other experts to help them in creating and implementing their plans. These standards also help students to understand the relationship between their personal well-being and workplace performance. Financial literacy is embedded in these standards, in which individuals acquire the knowledge and ability to manage their finances as they progress in their careers.

The modern job environment extensively utilizes technology to perform most tasks and solve most problems. CTE standards ensure a system in which students are exposed to and trained in how to apply modern technology to maximize productivity. Students can begin to foster adaptability in an ever-changing world within an environment that is conducive to learning. Students can transition into the workforce with confidence of their potential contribution to the workforce. They are also shown how to be team players, as both team leaders and members. This also contributes to their productivity, as it removes interaction barriers between members of a team, and consequently improves the contribution of each member. These standards also cultivate innovation and creativity in students. They can deliver new and valuable solutions to improve organizations (Brand, Valent, & Browning, 2013).

Syllabi and handbooks are an important part of the documentation required in the early field experiences. The syllabus can also be utilized as a checklist and guide to help the instructors to explain the approach of the course and explain the purpose and rationale of course objectives. The syllabus also serves as a synopsis of the material and learning tools (Stark & Lattuca, 1997). Most of the learning in teacher education occurs outside of the classroom, and thus it is critical to plan the assignments and activities that are most helpful in that context (McKeachie, 2002). Although several authors and researchers have developed guidelines to create syllabi, there are no specific rules regarding what must be included (McKeachie, 2002).

While a syllabus is a concise documentation, a handbook is broader in its appeal, as it more akin to a guide that serves as a communication tool between a college and its stakeholders. It communicates the guiding principles of the college or the field experiences, discusses the key components of early field experiences, and presents the role and responsibilities of the people and bodies involved. It also acts as a public-relations tool in which it explains the importance

and role of teacher education in building the team of teachers, while reflecting on the nature of the institute or college (Slick, 1995).

While the first two levels of foundations and organizations provide the base for active learning that should occur in the early field experiences, this level is where strategies transition from theory to practice. The substantive development of the students occurs in the implementation stage. In this stage, outcomes of the students' active learning are developed. This stage also defines roles and provides opportunities for meaningful interactions between the pre-service teacher, the trainers, supervisors, and peer groups.

The success of early field experiences depends on different levels of interaction that are promoted in the institute. The interaction between the university and cooperating colleges constitutes a dialogic process in which practice and reflection theory help each other (Zeichner & Melnick, 1996). Early field experience programs should harness open and direct communication, and facilitate an environment in which teacher education programs and schools are accountable for their communication (McIntyre et al., 1996). The total intent and quality of the field experiences are directly related to the attitude and practices of the overall guidance and supervision in the school or university (J. G. Knowles & Cole, 1996). The interaction between different agents should be intentional and not forced, so that any lack of communication can be eliminated between the institutes and cooperating organizations. Gaps in communication include situations, such as no intent to create agreement related to the responsibilities of each teacher, concerns pertaining to the lack of quality of supervision, or uneven expectations between students and teacher educators (McIntyre et al., 1996). Early field experiences can be improved through teachers' collaborative negotiation of the practicum and/or curriculum and when each of the teachers is treated with equal respect.

Early field experiences can be divided into two types: early and mid-tier (Jaquith, 1995). In the early experiences, an opportunity for career exploration exists; in the mid-tier experiences, the opportunity with the pre-service teachers comprises developing the skills required to become a teacher. This two-tier learning sets the early field experiences model into two orientations: exploration and teacher development. The outcomes and related learning strategies evolve from these two orientations of early field experiences, discussed below.

One of the positive results of the early field experiences is the exploration of career (Jaquith, 1995; Kelleher, Collins, & Williams, 1995; McIntyre, 1983). Once pre-service teachers complete the exploration phase, the early field experiences allow them to develop and transition towards becoming full-time teachers (Jaquith, 1995; J. G. Knowles & Cole, 1996). Early field experiences at the teacher development stage include converting theory into practice (Kelleher et al., 1995). At the teacher development stage, the outcomes of early field experiences include melding theory into practice (Kelleher et al., 1995), applying knowledge and developing the skills of the teachers, and finally converting pre-service teachers into teachers (Liston & Zeichner, 1991).

Learning results of early field experiences are achieved through various learning strategies. The initial learning strategies can fulfill career exploration. Once pre-service teachers explore their possibility of success in the teacher education program, early field experiences can be used to develop and implement appropriate learning strategies. By the time that students complete their initial learning strategies, they have learned the fundamental skills needed to become professional educators.

California's CTE program has a firm theoretical and practical foundation based on an explicitly stated rationale. Career technical training in California emphasizes diversity, equity,

and access to curricula for all students. In this regard, every CTE teacher in a professional teacher program is required to understand the California laws regarding educational diversity and equity, as well as their relevance in the school curricula. Instructors enlighten educators about the importance of providing all students with equitable access to school resources and curricula. Career technical training sheds light on how teaching practices and outcomes are impacted by the diversity of students in California. Similarly, attention is paid to socioeconomic realities. The importance of accommodating diversity helps teachers to identify, analyze, and avoid personal and institutional biases. CTE teachers are taught to relate the background experiences, languages, abilities, and skills of students to the most suitable pedagogical practices to tailor instructions that address weaknesses of the students, thus ensuring high achievement for all students.

Early orientation intends to meet the requirements of beginning teachers. The sponsor of the program works in conjunction with the employer to facilitate an initial orientation for the teachers during the first months of teaching. Educators are provided with initial skills and knowledge, and their attitude is inclined towards CTE success. The orientation introduces teaching skills and knowledge that is structured to address the immediate needs of beginning teachers. An overview of the ethical and legal responsibilities and school policies are also highlighted during orientation. Similarly, strategies for student safety, instruction on research-based teaching, assessment, and evaluation of students are incorporated, inclusive of those with special requirements, such as gifted and challenged students.

CTE teacher's performance is guided and evaluated throughout the preliminary credential period through constant supervision by an administrator at the school site and support through a supervisor from a teacher preparation program provided by the school's district or a university's

credentialing program. The supervisors are highly skilled in analysis, observation, and feedback techniques. They are tasked with providing the career technical education teachers with accurate, complete, and confidential feedback, including information about their professional growth and competence. Upon the completion of the program, the instructors, based on documentation and written verification, implement a comprehensive assessment to establish whether the teachers have satisfied each of the standards. Formative and summative assessment techniques are used to determine the competence of CTE teachers (Darling-Hammond, 2006). The next step entails a program of advanced preparation and professional development for the teachers. CTE teachers adopt integrated instruction that conforms to the state's CTE curriculum frameworks and standards. Teachers receive individualized support coupled with formal professional development.

CTE standards provide numerous advantages to students as well as the education system in general. Unlike previous education systems, CTE standards aim to adequately prepare students for pursuing their college and career goals. The standards guide educators in coming up with curricula that guides both teachers and learners to achieve these goals. The CTE standards have changed various ways in which professional development is offered to educators and students. They are included in several courses and over multiple school years.

In the professional setting, participants are often required to carry out research on various problems. These education standards provide the foundation to be certain that students are equipped with knowledge about how to plan and conduct investigations, and as a result propose solutions. Students can learn reliable research processes and acquire the most recent information from valid sources. Having met these effective learning standards, students emerge career-ready, which facilitates their securing fast and suitable job placement. Depending on their ability to

apply their skills and knowledge, graduates possess the potential to become licensed in their fields. The CTE standards provide specific areas of content in the learning process. Examples of these sectors include academics, communication, technology, problem solving, and critical thinking. This practice goes a long way in improving students' pass rates.

Career Technical Education Classroom Observations

Actual accounts of people who have participated in CTE can be researched to evaluate programs. Evaluation of new employees who have gone through this program can be conducted in the organizations in which they are employed. This evaluation is performed to assess the level of skills and knowledge that they possess about their work environments. They can be assigned different tasks that test their ability to put these skills and knowledge into practice in a real-life situation. The skills that they implement as they perform these tasks, such as how they communicate with others, make decisions, and solve problems, are observed in the evaluation process. If they can handle these tasks by utilizing their knowledge, then this will indicate that the completed CTE program was effective in supporting workplace skills. On the other hand, if the individuals fail to handle these tasks, this failure may point to areas in which the CTE program was ineffective (Burke, 2011). Another method to assess would be to analyze the results of the students going through the program. CTE standards are supposed to improve the results of students. Thus, an improvement in their grades indicates that the standards are indeed effective, while no improvement or a decline shows that the program is ineffective.

Classroom observations are critical in ensuring that there is effective teaching and sufficient progress in classwork. However, the observations can prove to be challenging since day-to-day class activities tend to change. Due to these changes in activities, it is difficult to define the effectiveness, reliability, and validity of the observations. Therefore, this study

focuses on classroom observations and how they are conducted, as well as an analysis of accessible standardized student test scores and instructor interviews. The research will primarily be based on quantitative methods utilized to measure behaviors in classrooms, which are deduced from different events and behavioral scenarios. This will assist in the final analysis of whether the classroom observation practices are effective.

To develop scientific guidelines for best teaching practices, there should be reliable and objective tactics systematically used to conduct observations. Classroom observations have been used to identify instructional practices needed in classrooms and investigate inequities among students. Observations can have a positive impact on teachers' professional practices.

According to Good & Brophy (2000), class observations are important in that they help describe what happens in classrooms to delineate several issues of complexity that face practitioners.

Good stated in his analysis that these observations are valid since there are several techniques that may be employed to validate them, especially when the specifically designed observation technique is used to describe a phenomenon. According to Stallings (1980), classroom observations aid in improving teaching practices. This is because they tend to yield essential information pertaining to classroom behaviors of both the teacher and the students, which has implications for improving teaching practices. Stallings noted that most teachers lack information that is valid and accurate to facilitate their professional growth. This presents an obstacle to students in implementing their instructor's suggestions. Thus, the main purpose of classroom observations is to improve teachers' classroom instruction. Observations help the teachers to find their strengths and weaknesses, which allows them to maximize and correct them, respectively. The feedback obtained from the observations helps the teachers assess the functioning of their classroom activities and make the desired changes. However, this is only

attainable by using trained observers to conduct the classroom observations and provide teachers with reliable feedback concerning their classroom instruction.

Studies on the use and validity of classroom observations that use classroom observations as a key tool (Ing, 2010, Meyer, Cash, & Mashburn, 2011, Smith, 2006, Van, de, Minnaret, & Wubbels, 2014) have been conducted. Observations are a fundamental component of the evaluation process, as they can be a reliable assessment of effective teaching. Currently, there are various types of classroom observation techniques, such as rating scales, checklists, and charts. However, most people tend to prefer systematic classroom observations that entail the utilization of interactive coding systems. The coding systems in the technique enable an individual observer to record approximately 95% of the students' and teachers' behaviors during certain time intervals. During the process of recording, the observer refrains from making any judgments or inferences pertaining to the classroom observation being conducted. The behaviors are noted, but the coding system allows for relative objectivity. In addition, other tools are utilized in classroom observations, such as the Stallings Observation System (Stallings, Knight, & Markham, 2014), the Brophy-Good Dyadic Interaction System (Brophy & Good, 1969), and the Classroom Creativity Observation Schedule (Denny, 1972), which have been widely used in research, as well as in projects to assist in teacher development and improvement of class work.

According to research on student-teacher dynamics in classroom observations performed by Meyer et al. (2011), there are several major merits of conducting classroom observations. These strengths include allowing the researchers to conduct studies of educational processes in natural surroundings, which procures data that are more efficient, precise, and detailed, compared to other sources of data. Two of the driving reasons for classroom observations are acquiring information and stimulating change where necessary to improve teaching practices.

Walberg (2003) conducted several classroom observations to prove the reliability and the validity of the observation practices. He found that they deliver coherent information and substantive knowledge on different classroom behaviors. Walberg also insisted that some of the classroom behaviors tend to relate to the academic achievement of the student. The behaviors noted are how well the student relates to the teacher providing feedback and corrections, the conducting of reviews, and performance during independent practice. Walberg found classroom observations to be integral in helping to understand the basis of effective teaching.

Additionally, most teachers will change their behaviors and attitudes towards their students positively after receiving feedback from their classroom observers. This is explored by Brophy and Good's (1974) study, referred to as a *treatment study*, based on giving teachers observation feedback based on 40 hours of observation in their classrooms followed by an interview. Because of the observation and interview, the attitudes towards specific students and interaction patterns of these teachers changed. Other researchers, such as Douglas (2009), utilized the strategy and found that there was always a positive change whenever teachers received respectful and professional feedback regarding their classroom instructions.

Generally, studies (Ing, 2010; Meyer et al., 2011; Smith, 2006; Van et al., 2014) tend to reveal that there is positive value in classroom observations, and teachers can improve as practitioners so long as they are: (a) given suitable feedback concerning their classroom conduct, and (b) provided appropriate suggestions to help them improve. Therefore, classroom observations are found to be effective and viable, because the feedback that comes as a result of the observations tends to create an imbalance of the observer's perceptions and that of the teacher regarding his or her performance. This imbalance stimulates positive change in the teachers, as they struggle to restore their perceptions and attitudes to align with those of the

observer. Subsequently, the teachers' self-awareness is provoked, and they tend to modify their actions and instructional behaviors accordingly.

Given the value of classroom observations and sensitivity of possible perceptions, in 2008 an observational checklist was developed by two instructional coaches, Bice and Gatlin. With support from district administrators, the checklist was initially developed to support special education instructors in acknowledging success in their classroom and give objective feedback. The tool was used from 2008–2010 at seven comprehensive high school campuses in northern Los Angeles County. The tool was presented to instructional staff and was then used in both special education and general education high school classes. Five instructional coaches used the quantitative checklist with each teacher receiving a copy of the checklist within 48 hours. During the instructional coaches' tenures, the tool was used over 200 times among the five coaches.

Although classroom observations have vast merits, there are also limitations that are due to requisite precautions and inevitable criticism related to the observation process. Some research finds that, despite the observational practice of providing in-depth information, a lack of consensus remains. For example, Galton (1988) explained that observations that lack a theoretical framework cannot explain the impact of the teacher's instruction on the students. Furthermore, he argued that these observations are biased to the observer or the developer of the instruments being used. Popkewitz, Tabachnick, & Zeichner (1979) stated that it is possible for the observer to manipulate the teacher's response towards the instruction functions, since they can identify, control, and manipulate them through alterations of selected behaviors. It was concluded that teaching involves a summation of several discrete behavioral practices, and when one of them is altered, this translates into a major change in the quality of teaching.

Another concern is that the observers tend to focus on superficial behaviors and overlook subsequent behaviors that are important in behavioral analysis. In addition, some of the techniques utilized tend to be limited to a behavior that can be quantitatively asserted, thus making it a challenge to observe complex classroom behaviors. Moreover, the methodologies of observation can have adverse effects on a conclusion pertaining to an observation. It is also important to note that the presence of the observer can also affect the actions of both the students and teachers, which may produce invalid results. The reactive effects of the teacher's anxiety or student's disposition can interfere with the conclusions drawn regarding the classroom session. However, researchers, such as Medley, Coker, & Soar (1984), have stated that the observer's presence does not constitute a serious concern, and thus there is little possibility of this threatening the reliability or validity of the data collected.

Reliability and validity depend on the consistency of the teacher's behavior, as well as of the student's, during a series of observations. Therefore, there should be time allocated to conduct classroom observations and keep adequate records of the observed behaviors to obtain valid and reliable feedback. Therefore, an appropriate number of classroom observations are required to ensure validity and reliability, with the analysis of data focused on students, the classroom, the instructor, and the corresponding interrelations. There are also analytic developments, such as hierarchical linear modeling, which enable the observers to identify and separate group and individual behaviors in a classroom.

The limitations and criticisms should not detract from the utility and value of classroom observations. Due to current technological advances, the limitations of classroom observations have been reduced, and the accuracy of the observations has been increased. Furthermore, the utilization of multiple indicators aids in capturing evidence related to what transpires in

classrooms. This can be accomplished by combining the use of both qualitative and quantitative methods of classroom observations, using the observational instruments that assess interactions, and authentic instructional practices.

Instructors are to base their teachings on principles that will help students to gain the most from the teaching period or class. There are practices that are proposed to support the instructor to achieve the goals set out by the program. For example, the teacher should help students understand the learning goals and specific objectives that must be achieved by the end of the learning process. According to Wang (2011), the instructor should also adopt classroom discussions so that the students can learn from each other. This will give the instructor the opportunity to carry out a formative assessment through observation. The instructor should ensure that he or she has created an opportunity to obtain feedback. This would help to determine whether the students clearly understood the concept. The instructor would then be able to adjust the learning process, materials, and instructions accordingly.

Chapter Summary

The literature review explored the historical background of CTE. Current CTE research generally agree that they understand, read and analyse the nature, scope, and possibilities associated with CTE while assigning equal importance to the history and later development of vocational education, training, and development. Thus, without understanding and accepting the relevant historical facts, researchers in the field of vocational education will fail to achieve important insights into the relationship between schooling or college and work. As the result of this failure, they might again create a similar kind of pedagogy that is incapable of resolving the demands of a changing economy. In such a scenario, historical information can support the

vocational training educator in recognizing as well as understanding ways of resolving the problems through pragmatic alternatives.

Next, the literature review focused on andragogy and how it differs from pedagogy. Andragogy means “adult leader” which points towards the different kinds of learning between adults and children. Pedagogy refers to the education of children, and andragogy refers to the education of adults. A significant difference between pedagogy and andragogy involves the inappropriateness of teaching adults from a pedagogical perspective. The literature review studied the model of M. Knowles (1984) for vocational training for adults according to andragogy.

The California Standards for the Teaching Profession (2009) support that instructional practices are intended to help learners or trainees gain knowledge and develop technical skills that are relevant to their personal lives and careers. However, these practices are presented from the perspective of the instructor. The proposal is that these practices need to be evaluated from the observers’ point of view. The practices need to be evaluated and critiqued by an independent party other than the learners, instructor, or institution. For example, employers, or the public, who interact with the learners after the process is completed might have different perspectives of the entire learning process.

Chapter 3: Methodology

As principal of a county-wide CTE center, which includes regional occupational programs, the author has witnessed how CTE has transformed students into driven professionals in their industries. Pursuing a career after skills-based training does not eliminate the possibility for advanced schooling. Industry Licensure or certification earned through career technical education educational training provides the demonstrated skills in their respective fields that are essential for a successful career. Furthermore, many students later pursue advanced formal education in completing bachelors and graduate programs both in their content area and in management.

The goal of this exploratory mixed-methods study was to explore the instructional environment of post-secondary CTE classrooms within one site. Three instruments were utilized to capture the instructional practices of the participants through observations and interviews: two instruments were used for the instructional observations of the participants, with the third instrument utilized for the post-observation interview with the same participants. In addition, available licensure rates were reviewed. The research methodology used to test the research question is presented in this chapter. This chapter is organized into the following sections: a) population, b) sample, c) design, d) data source, and e) human subject considerations.

Research Questions

The present study was guided by the following four research questions:

- RQ 1: What are the licensure pass rates among students attending post-secondary CTE courses at the ABC District Adult School?

- RQ 2: To what extent do CTE instructors at the ABC Adult School follow known best practices as conceptualized by Bice and Gatlin (2009) in the Classroom Observation Checklist?
- RQ 3: To what extent do career technical education instructors at the ABC Adult School follow known best practices, as conceptualized by M. Knowles (1984) as the six principles of Adult Learning Theory?
- RQ4: What do CTE instructors at the ABC Adult School describe as their best practices as conceptualized by the California Standards for the Teaching Profession (CSTP, 2009)?

Setting

The ABC Adult School is one of the most comprehensive post-secondary institutions in the county. ABC Adult School offers CTE, adult basic education, adult high school diploma, and English as a Second Language programs year-round. Students have access to career training usually found only at community colleges and private career-training institutes. CTE courses at ABC Adult School are offered at a fraction of the tuition cost of other post-secondary public and private educational institutions. Careers in the medical field are featured most prominently at the ABC Adult School, which include CTE training to become a medical assistant, medical assistant administrative front office, medical assistant administrative back office, certified nurse assistant, pharmacy technician, dental assistant, advanced computer technologist, automotive technician, and certified welder (ABC Adult School, 2015).

The ABC Adult School serves the adult population of the ABC Union High School District, which includes the communities of Oxnard, Port Hueneme, and Camarillo. Most programs are offered at the main school campus. In addition, satellite locations for dental assistant, medical assistant, and welder programs are located within 10 miles of the main

campus. Collective enrollment in 2013–2014 fiscal year was 6,440 students attending ABE/ASE, ESL/citizenship, adults with disabilities classes, and CTE programs (ABC Adult School, 2015).

There is no established site-based class minimum or cap, due to each program's guidelines in accordance with their program accreditation bylaws. In enrichment courses, the class size averages 25 students. Class size in career-technical programs, however, such as machine technology and welding, are closely monitored to ensure student safety. In lieu of apprenticeships, the ABC Adult School offers extensive externships within designated programs in accordance with state and national certification. These programs include medical assistant, certified nurse assistant, pharmacy technician, and dental assistant (ABC Adult School, 2015).

According to self-reporting upon enrollment, 2014–2015 student demographic records show that the student body at the ABC Adult School is predominately Hispanic (86%) and very closely divided between male (45%), and female (54%). There have been slight variances in gender distribution over the years. In the past there were a few more male than female students, with the reverse being the case over the past four years. This trend seems to be increasing by a small amount annually (ABC Adult School, 2015).

Population

The target population for this research was educators within a CTE instructional setting. Within this alternative educational organization, career technical educators are instructors working at a post-secondary public school whose programs prepare adult learners for industry-recognized certifications. For the purpose of this study, participants were part-time and full-time instructors from the ABC Adult School. The ABC Adult School has 57 instructors with 42 being female and 15 being male. Fourteen of the 57 certificated staff members have permanent tenured

status. The remaining are considered as part-time temporary due to the number of hours that they work each week, even though most have been employed at the school for many years. Of those 52, 26 were identified as current instructors of pathway courses.

Maximum variation sampling (Creswell, 2013) is a sampling technique used in this study. This sampling method was employed to gain greater insight into an experience from all perspectives. Maximum variation allowed the researcher to capture the variety of instructional strategies utilized by CTE instructors in a public post-secondary institution. In addition, the strategy of typical case sampling (Creswell, 2013) was used in this research, following maximum variation sampling, to elucidate any significant trends of commonality or variances in their instructional practices. Typical case sampling is a purposive sampling technique used to compare the findings from a study using typical case sampling with other similar samples. There is little extant research on the topic of the instructional practices of CTE instructors. Therefore, typical case sampling was employed as a first attempt to discern the instructional practices observed.

There were 15 participants within this exploratory research who were employed as post-secondary CTE instructors during the 2016–2017 academic school year. The sample size of 15 was appropriate, so that at least half of the potential participating CTE instructors were observed across the spectrum of career pathways. This was done to create a more accurate picture of instruction at the ABC Adult School. In addition, the principal and assistant researcher observed the same instructor on different days to ascertain the reliability of the instructor's technique. Because this research aimed to capture data from instructors in various career pathways, or content areas, maximum variation sampling for participants was utilized to capture common themes evident across data sets.

Table 1

Participants Based on CTE Pathway and Teaching Experience

CTE Pathway	Total Staff	Five or More Years Teaching	Participants
Agriculture and Natural Resources	1	1	1
Arts, Media, and Entertainment	3	3	1
Business and Finance	2	2	1
Health Science and Medical Technology	10	9	5
Information and Communications Technology	2	1	1
Manufacturing and Product Design	2	2	2
Public Service	2	1	1
Transportation	4	3	3

Design

This study addressed post-secondary CTE instructional practices. A mixed-methods design was used, and it involved collecting first quantitative data, and then explaining the quantitative results with in-depth qualitative data. Mixed-methods research design supports the utilization of different perspectives or ideal models, as opposed to the general standards for quantitative or qualitative research. Additionally, it adopts a perspective that may incorporate both quantitative and subjective exploration. Mixed methodology also supports the shortcomings of quantitative and qualitative research by combining the strengths of each method for the study. It guarantees that the research questions are addressed in ways that cannot be answered by subjective or quantitative methodologies alone. A more grounded hypothesis may be developed, and more comprehensible findings can be obtained from two methodological approaches to the research question. As this study explored the instructional practices of participants, the general research process was emergent in design (Creswell, 2013). Using a

qualitative research component was employed “to learn about the problem or issue from participants and engage in the best practices to obtain that information” (Creswell, 2013, p. 47).

Data Sources

The sequential exploratory design was conducted within this research with the first phase being qualitative data, followed by the second which was quantitative data (Creswell and Plano, 2011). This design was chosen as it is often the design chosen when an instrument is being developed and tested (Creswell & Plano, 2011, p. 199) and “when testing elements of an emergent theory resulting from the qualitative phase to also be used to generalize qualitative findings to different samples” (Morgan, 1998, p. 364). With the use of the Classroom Observation Checklist by Bice and Gatlin (2008) and the opportunity to apply the current research’s findings to other CTE programs beyond post-secondary, sequential exploratory design was deemed most appropriate for both the data sources and purpose of the study.

Within this exploratory mixed method research, four sources of data were sought: two qualitative and two quantitative. The goal was to explore the instructional practices of CTE instructors through capturing qualitative data through instructional observations and post-observation interviews. In the quantitative phase of the study, licensure pass rates of CTE programs were sought to establish a baseline to draw possible deductions from the other data sources. Additionally, a Classroom Observation Checklist was utilized in the observation of post-secondary CTE instructors (Bice and Gatlin, 2008). It was anticipated in this research that the instructional best practices of CTE instructors would positively correlate primarily to the principles of Adult Learning Theory (M. Knowles, 1990), and secondly to the California Standards of the Teaching Profession (2009).

RQ 1: Quantitative Data	•Licensure pass rates among students
RQ 2: Quantitative Data	•Classroom observations of participants using a nominal checklist of known best practices (Bice and Gatlin, 2008)
RQ 3: Qualitative Data	•Classroom observations of participants using observation notes aligned to Adult Learning Theory (M. Knowles, 1988)
RQ 4: Qualitative Data	•Post-observation interview of participants with prompts aligned to the CSTP (2009)

Figure 2. Research questions aligned to data sources.

An assistant researcher was enlisted for data collection at the school site. The assistant researcher was solicited due to his extensive experience in CTE. He has contributed 10 years as a CTE educator, following 20 years as a professional in industry. Under general direction, he assisted the study by performing moderately complex observations following protocols described in this research. The assistant researcher has participated in the piloting of both observational tools, as well as instructional observations of CTE instructors. Anticipated additional duties included compiling, processing, and analyzing both qualitative and quantitative data sources. Furthermore, the assistant researcher participated in IRB training with a copy of the certificate on file with the principal researcher.

Instrument 1: Classroom observation checklist for RQ2. The principal researcher adapted a classroom observation checklist previously used when conducting non-evaluation classroom observations to capture quantitative data. Instructional practices will be assessed using an adaptation of the AVUHSD-IC Classroom Observation Checklist (Bice & Gatlin, 2008). The principal researcher used the original instrument with a group of eight high school instructional coaches in various content areas.

The revised version of the Classroom Observation Checklist was pilot-tested at a school site adjacent to the ABC Adult School and Career Institute by the principal and assistant researcher for the present study. Ten post-secondary CTE instructors participated. Furthermore, all participants in the pilot study found the tool to be non-evaluative and useful in supporting instruction. This feedback determined that adaptation of the AVUHSD-IC Classroom Observation Checklist would be satisfactory and appropriate for this study by six instructional coaches.

Instrument 2: Adult Learning Theory instructional observation template for RQ3.

The principal researcher has designed a template to guide the observations of post-secondary CTE instructors. There are extensive instructional observational tools in both andragogy and CTE; however, the researcher did not find an instructional observational tool for post-secondary CTE instructors through the lens of andragogy. Therefore, a qualitative instructional observation notes template aligned to the principles of M. Knowles (1980) was created. Both the principal and assistant researcher used the template within Microsoft Word, with the six principles of Adult Learning Theory (M. Knowles, 1984) listed as column headers with observational notes to be collected under the corresponding principle.

Instrument 3: Post-Observation Interview template for RQ 4. The third set of data was participant interviews that were “one-to-one question and answer sessions where the researcher may employ a variety of techniques” (James, Milenkiewicz, & Bucknam, 2008, p. 69). Six open-ended questions based on the California Standards for the Teaching Profession (2009) were used to guide the interviews (Appendix C), which were facilitated outside of their workplace in a setting that was comfortable for the participants. Some of the participants gave their permission to be recorded and their recordings to be transcribed for review. Six open-ended

questions were created in alignment with the California Standards of the Teaching Profession (2009). The questions are as follows:

1. What are your best practices for instruction?
2. How do you feel about resources available to your class?
3. What helps you decide what to do while you are teaching?
4. How do you decide what to teach?
5. How do you assess your teaching?
6. How do you keep current in your content area, adult learning, or both?

To establish content validity of the three instruments to measure the instructional practices of CTE instructors, pilot testing (Creswell, 2013) was employed using participants who are CTE instructors. In addition, the pilot was established on the “basis of convenience, access, and geographic proximity” (Creswell, 2013, p. 165) to the researcher. The adult school instructional setting was the same in both the pilot testing and research in understanding the practices of CTE.

Pilot testing is a small scale preliminary study conducted to evaluate feasibility, time, cost, adverse events, and statistical variability to “predict an appropriate sample size and improve upon the study design prior to performance of a full-scale research project” (Hulley, 2013, p. 168). Pilot testing is frequently carried out before research to avoid misused time or resources on an ineffective research design. Generally, a pilot study is conducted on similar participants of a sample population, but none from the final sample. This is because their participation may influence later research if they have already been involved. Pilot testing offers valuable insight, and should anything be missing in the pilot study it can be added to this mixed-methods research to support accurate findings (Creswell, 2008).

Pilot testing was conducted by both the principal and assistant researcher for the three instruments to pre-test and prepare the instrument and researchers. With the instruments being both quantitative and qualitative, the pilot test provided confirmation of time needed for data collection and reduced potential challenges in conducting the research. Simultaneously, the research team ran through two classroom observations using Instrument 1 and Instrument 2. The process proved most beneficial as the need to retrain the assistant researcher in research protocol, and calibration of collected data. After retraining, the research team conducted two more observations with different participants. Results of the second pilot test produced similar results from both members of the research team and increased the confidence of the team in securing proper data.

Voluntary participation was solicited at the research site. The research site principal agreed to allow the principal researcher to place flyers (See Appendix E) in teacher mailboxes, inviting voluntary participation for all instructional staff. The researcher presented this optional research opportunity at two staff meetings preceding the research time-frame.

Each teacher had two classroom observations, with the participant and researchers agreeing on a time that was best for the observations. The researchers conducted the observations during one class period, with most observations occurring in the evening, as most of classes were offered at that time. Both classroom setting and instructor were observed and noted using the Classroom Observation Checklist (see Appendix A) and the Classroom Observation Data Collection Form (See Appendix B) simultaneously. The researchers used a small laptop with the observable data digitally entered into a Microsoft Word document.

Interviews were conducted after both observations were completed. Prior to the interview, participants were referred to the informed consent letter to establish consent and

clarify any questions that the participants may have. The post-observation interviews were conducted by the principal investigator within seven days of the second observation at a time that was convenient for the participant. The interviews took place at school or an agreed-upon location where the participant felt comfortable. Interviews were 30–40 minutes in length, with an estimated five minutes for each of the six questions. The interview responses were hand-recorded and transcribed during the interviews. Each participant had one interview, with notes completed on the template (Appendix C), with additional pages if necessary. Although some participants agreed to be recorded for their interview, the researcher took notes during the interviews without audio recording.

Use of member checking was utilized to engage the participants in all aspects of the study through having them review their feedback for accuracy (Creswell, 2013). Participants had the opportunity to review their post-observation interview transcripts for their approval. This created an occasion for participants to expound on or clarify any questions regarding the data provided. Having the participants play a more involved role in the research created more occasions for both the participant and researcher to accurately report their instructional experiences and expertise, as well as develop a thorough description.

Human Subject Considerations

The length of time for each observation was one class period, allowing participating instructors to engage in various instructional practices within their scope of CTE. Following the observations, the interview took place within seven days, so that the observed period could be remembered more easily. Prior to the observation, participants were made aware of the informed consent process (Appendix F).

To limit potential risks in loss of time and discomfort, the length of each observation was a class period, and this was explicitly stated to potential participants. In accommodating the time for the observational research setting, it was encouraged that the natural observational setting be a “quiet location free from distractions” (Creswell, 2013, p. 165). The researcher was mindful of not scheduling observations when interruptions, such as safety drills, might occur. There was no reported or observable discomfort of the participants during the classroom observations and post-observation interviews. Instructors did disclose their experiences of observations in settings that were not positive and/or supportive of their self-perception of best practices and expressed an appreciation of the human subject consideration process and protocol.

Confidentiality was exercised for this research study. Participants could terminate either the observations or interview at any time, but none chose to do so. The names of the CTE instructors were replaced with a unique letter–number identification code, and thus their names remained confidential throughout the study. No student names or identifying information were recorded at any time. Only the principal researcher had access to the observation checklists and interviews, which were shared between researchers on a removable disc. The data were stored on a password-protected computer in the principal investigator’s place of residence. The raw data will be stored for a minimum of three years, and after five years the data will be destroyed

Chapter 4: Analysis of Data and Findings

Chapter 4 begins with an analysis of the sample demographics. Following the analysis of the sample demographics are the description of data analysis, triangulation of data, findings, findings and summary of major findings.

Sample Demographics

A sample demographic is a subdivision of the population. The use of a sample demographic is needed from the inability of the researchers to test all the individuals in a given population of post-secondary career technical education instructors. The purpose of the sample was to allow the researchers to conduct the study to individuals from the population of post-secondary career technical education instructors so that the results of their study can be used to derive conclusions that will apply to the entire population (Creswell, 2015).

Fifteen participants in this study are post-secondary CTE instructors at the ABC Adult School. Demographic data was collected using the school's WASC report (ABC Adult School, 2015), a public document in which public education institutions "demonstrate the capacity, commitment, and competence to support high-quality student learning and ongoing school improvement" (ABC Adult School, 2015, p.5). Nine participants were male, six were female, with 40% being under 40 years of age. The highest reported ethnicity was Caucasian being 53%, with the next highest reported ethnicity being Hispanic or Latino being 26%. Of the participants, 53.3% reported having post-secondary certification as the highest level of education completed, and the second highest was a bachelor's degree, at 33.3%. Credentials reported by participants showed 60% having CTE credentials and 33.3% having Designated Subjects Vocational credentials. Participants having 5–10 years of experience were the highest, at 60% of the total participants.

Table 2

Demographic Characteristics of Participants

Characteristics	<i>n</i>	Percentage
<u>Gender</u>		
Male	9	60.0%
Female	6	40.0%
<u>Age</u>		
30–39	6	40.0%
40–49	1	6.7%
50–59	5	33.3%
60+	3	20.0%
<u>Ethnicity</u>		
Caucasian	8	53.3%
Hispanic or Latino or Spanish Origin of Any Race	4	26.7%
Two or More Races	2	13.3%
Asian	1	6.7%
American Indian or Alaskan Native	-	-
Black or African American	-	-
Native Hawaiian or Other Pacific Islander	-	-
<u>Education</u>		
Post-Secondary Certification	8	53.3%
AA/AS	-	-
BA/BS	5	33.3%
MA/MS	2	13.3%
<u>Credential Type</u>		
Career Technical Education	9	60.0%
Designated Subjects Vocational	5	33.3%
Single Subject	1	6.7%
<u>Years as CTE Instructor</u>		
5–10	9	60.0%
11–15	3	20.0%
16–20	1	13.3%
20+	2	6.7%

Description of Data Analysis

Quantitative analysis was used to answer RQ 1: “What is the licensure pass rates among students attending post-secondary CTE courses in the ABC District Adult School?” and RQ 2: “To what extent do CTE instructors at an Adult School follow known best practices as conceptualized by Bice & Gatlin (2008) in the Classroom Observation Checklist?” To answer RQ 1, ABC District Adult School’s ACS/WASC (ABC Adult School, 2015) report was reviewed, and based upon the report’s findings, questions for clarification were asked of the site administration and two current CTE instructors.

To answer RQ 2, the available nominal quantitative data from the Observational Checklist (Bice & Gatlin, 2008) were entered from the checklist into a digital excel spreadsheet by the principal researcher and an assistant. The scores of each researcher were entered separately, the two observations were added and divided by two by item. The checklist was analyzed from the two separate observations conducted by both researchers, using both observational tools to note the reliability of their instructional practices from one lesson to the next.

Data for the post-observation interviews were transcribed by an assistant researcher. Qualitative analysis was performed as transcripts were read through by the researcher for general meaning along with any corresponding interview notes from the researcher. Qualitative analysis was used within this research to categorize findings to answer RQ 3 and RQ 4. To describe or classify data, the process of coding was used to aggregate “the text or visual data into small categories of information” (Creswell, 2013, p. 184). The coding frame of word, phrase, or sentence was determined to capture the patterns throughout the interview transcripts.

In a group setting, three trained coders were given the complete transcripts from the interviews for review. Poster sheets were placed on the walls to capture concepts and patterns from the transcripts. Identified concepts and patterns were listed as headers on each sheet. At this first level of coding, the researcher looked for distinct concepts and categories in the data, which formed the basic units of analysis into broad categories, and then into sub-categories as the coding continued. While coding the transcripts, the researcher began highlighting common themes. As transcripts were transcribed into a computer text format, concept maps were generated by the researcher. In addition, wording analysis programs helped the researcher to “visualize the relationship among codes and themes” (Creswell, 2013, p. 202). The researcher examined the findings from the three sources of input to determine if any commonalities and differences existed across the sets of data.

Triangulation of Data

Triangulation is an “attempt to map out, or explain more fully, the richness and complexity of human behavior by studying it from more than one standpoint” (Cohen, Manion, & Morrison, 2007, p. 254). The triangulation of data strengthened this exploratory mixed-methods research because the added sources of data provided deeper insights into areas of research question focus. Deficits evident in single-source data can be limited when utilizing multiple data sources to confirm the same research findings. Additionally, it was easier to recognize discrepancies in data sets when data triangulation was employed. In addition, triangulation of data minimized measurement, procedural, and sampling biases. Multiple data sources provided validity and corroboration, while complementing similar data. By using different approaches for data collection, the opportunity existed to obtain varied information providing data sets that corresponded to each other. Conclusions and results were more

thoroughly examined, as the data was supported through numerous types of research provided in the literature review instead of being limited to one when using a single-source of data.

With this research being exploratory mixed-methods in design to capture post-secondary CTE instructional practices, both qualitative and quantitative data were gathered. Qualitative data was collected from interviews of CTE instructors aligned to the California Standards for the Teaching Profession (2009) and observational notes aligned to andragogy (M. Knowles, 1988). Nominal quantitative data was capture using a Classroom Observation Checklist (Bice & Gatlin, 2008).

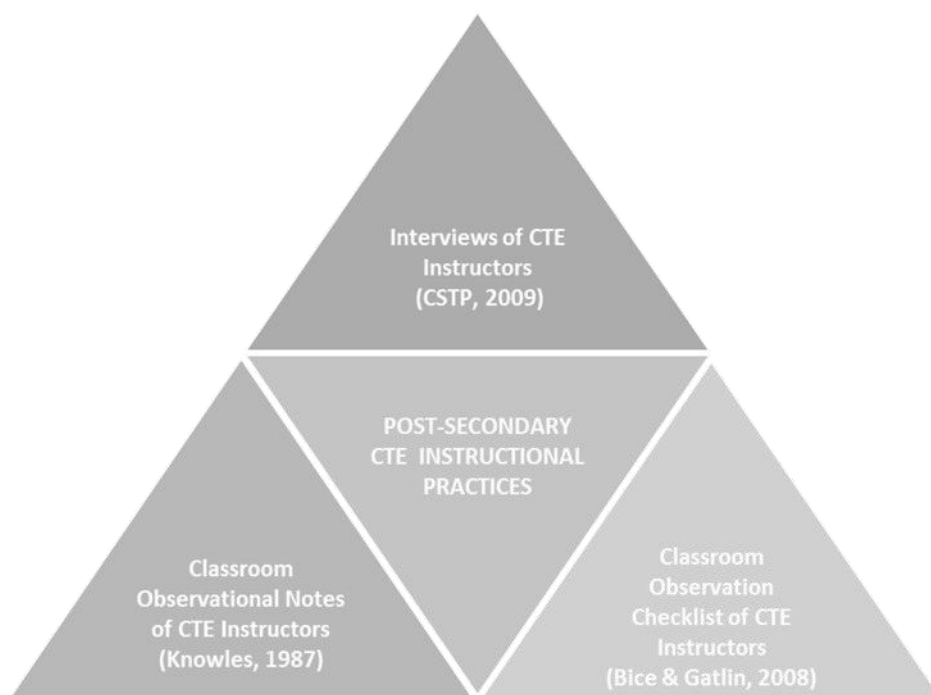


Figure 3. Data source triangulation

Findings

RQ 1 sought to answer what are the licensure pass rates among adult learners attending post-secondary CTE courses at the ABC District Adult School? ABC District Adult School does not formally collect or report the collective licensure pass rates for its CTE programs. The instructors reported to the research that the data of certifications is collected at the end of each

semester through the school site's database system, TOPSpro. Instructors stated that the instructor's responsibility is to take attendance. In addition, the instructors must enter the licensure passing rates and grades into a second database system, TOPSpro. When the researcher asked, administrators stated there were no data available regarding how many adult learners started each CTE program, how many adult learners dropped out, or how many adult learners were dropped from their enrolled CTE program. When the researcher asked administrators about TOPSpro, they stated that the licensure pass rates were currently not in either of these, or any computerized databases, and steps were being taken to obtain this data to comply with state funding parameters. The researcher was informed that steps were being taken by the current administration to obtain this data.

In their 2015 Accrediting Commission for Schools, Western Association of Schools and Colleges (ABC Adult School, 2015) report, ABC District Adult School reported that the amount of CTE certificates annually earned is 300. In addition, the report included the completion, certification, and employment data for the certified nurse assistant and pharmacy technician CTE programs (ABC Adult School, 2015).

Table 3

Certified Nurse Assistant Completion, Certification, and Employment Data

Certified Nurse Assistants	2010–2011	2011–2012	2012–2013	2013–2014	2014–2015
Program Completed	38	26	21	30	21
CA Certified	30	21	18	30	17
Currently Employed	33%*	14%	*	*	29%

Note. The data in this table are from “2015 WASC Self-Study Accreditation Report: Focus on Learning” by ABC Adult School, 2015. Reprinted with permission.

The researcher asked the Certified Nurse Assistant Director regarding the employment rate of 29%. This director responded

“I cannot speak of the previous program’s instruction, as I was hired in 2015. What I can share are changes made to the program under my oversight which include making the blocks of instruction longer and two days a week and clinical hours to be done at health care facilities looking to hire. This wasn’t done by the previous Director” (May 12, 2017).

This current director explained that the low rate of employment may be due to the lack of outreach to facilities hiring and previous clinical hours being completed at facilities not hiring. She also added that there are some adults looking to take the course not for employment, but for a better understanding of patient care as students are transitioning into multigenerational households, with some health care needed for family elders. The director stated, “There’s at least one in every cohort that is using their education to be able to take proper care of their elderly family members” (January 12, 2017).

Table 4

Pharmacy Technician Completion, Certification, and Employment Data

Pharmacy Technician	2010–2011	2011–2012	2012–2013	2013–2014	2014–2015
Program Completed	42	42	34	30	20
CA Certified	40	27	32	30	20
Currently Employed	18%	33%	16%	23%	10%

Note. The data in this table are from “2015 WASC Self-Study Accreditation Report: Focus on Learning” by ABC Adult School, 2015. Reprinted with permission.

The data above demonstrates that 10% of students who completed the Pharmacy Technician program between 2014–2015 are employed as Pharmacy Technicians. Like the Certified Nurse Assistant’s program, the current instructor was not the director or had any administrative oversight from 2010–2015. The current Pharmacy Technician program has been an instructor within the program since 2013 and worked under the previous program director.

When the current Pharmacy Technician instructor was asked about the employment rates from 2010–2015, she explained students were unable to get jobs because there was no internship option for students to learn the application of content and pharmacies to work with potential employees.

“The previous instructor was a medical doctor from a different country and although was qualified to teach the course, he didn’t have any pharmaceutical background of any kind. Students continued to complain to administration and he is no longer teaching this course” (May 19, 2017).

In the fall of 2016 the Pharmacy Technician program secured optional internships beginning in the 2017 summer term for students who have previously completed the year-long course.

Research Question 2 posed, to what extent do CTE instructors at the ABC Adult School follow known best practices as conceptualized by Bice and Gatlin (2008) in the Classroom Observation Checklist? During the instructional observation, a checklist of observable classroom behaviors (Bice & Gatlin 2008) was used to capture data from the observations among 10 categories. The nominal quantitative data was entered from the checklist into an excel spreadsheet, with occurrences calculated for each item on the checklist. The checklist was analyzed from the two separate observations conducted by both researchers, using both observational tools and noting the reliability of their instructional practices from one lesson to the next. For data compilation, participants and pathways were listed on a separate digital spreadsheet to record the frequency of each observable behavior. On the spreadsheet, the observable behaviors were listed on the left, with each of the 15 participants identified by a code along the top. Raw scores were entered by each behavior and grouped by CTE pathway. Because

each participant was observed two times with a possible raw score of 66 for each observation, the highest possible score total was 132.

Instructors with the highest frequency of engaging in instructional behaviors identified within the framework of the observation tool were from the Health, Science, and Medical Technology pathways, with the two highest scores and three of the highest five scores being from the same pathway. The third highest was an instructor from the Manufacturing and Product Design pathway. An instructor from the Transportation pathway had the lowest frequency score.

Table 5

Participants' Observational Frequency Scores

Participant	<i>n</i>
HSMT3: Health Science and Medical Technology	92
HSMT2: Health Science and Medical Technology	88
MPD2: Manufacturing and Product Design	85
HSMT4: Health Science and Medical Technology	83
ANR1: Agriculture and Natural Resources	77
ICT: Information and Communications Technology	75
MPD1: Manufacturing and Product Design	75
T2: Transportation	74
T3: Transportation	74
BF1: Business and Finance	74
HSMT5: Health Science and Medical Technology	67
PS1: Public Service	60
HSMT1: Health Science and Medical Technology	57
AME1: Arts, Media and Entertainment	56
T1: Transportation	40

Known classroom best practices of instruction and room configuration, as conceptualized by Bice and Gatlin (2008) in the Classroom Observation Checklist, are divided among 10 areas: Lecture, Levels of Student Engagement, Flow of Lecture, Grouping, Transition to Next Task,

Use of Classroom Space, Equipment, Resources, Review, and Next Steps. Each area has between two and twelve observable behaviors that can be marked nominally within the observation.

Table 6

Frequency Ranking of Instructional Behavior by Area

Area of Instructional Behavior	<i>n</i>
Equipment	85.3
Review	69.3
Flow of Lecture	67.5
Resources	62.5
Lecture (Direct Instruction)	60.0
Levels of Student Engagement	53.0
Grouping	53.0
Transition to Next Task	50.5
Next Steps	40.0
Use of Classroom Space	37.6

The frequencies of observable behaviors of each post-secondary career technical instructor within the 10 areas of instructional observable behaviors were ranked from highest to lowest. Equipment at 85.3%, Review at 69.3%, and Flow of Lecture at 67.5%, were the three areas most engaged during the two observations. With Equipment being engaged at a rate of 85.3%, observable items from the subset were analyzed further. There were five subsections supporting Equipment, with scores ranging from 73.3% to 90.0% (Table 7).

Table 7

Instructional Behavior: Equipment

Equipment	85.3%
Flexible Configurations for group work	90.0%
Industry Equipment	83.3%

(Continued)

Technology Accessible	86.7%
Resource Materials Accessible	73.3%
Whiteboards	93.3%

Research Question 3 posed, to what extent do CTE instructors at the ABC Adult School follow known best practices as conceptualized by M. Knowles (1984) as the six principles of Adult Learning Theory? A classroom observation data collection form was used to capture the instructional practices of post-secondary CTE instructors through the principles of Adult Learning Theory (M. Knowles, 1988). Both the principal and assistant researcher used the same data collection form and either wrote by hand or with a laptop for ease of recording. The six learning principles used to guide the collection tool are motivation, orientation to learn, readiness to learn, learners' experience, learners' self-concept, and the need to know.

Motivation. Instructors related to current practices within their industry. "Getting a recognized credential increases the likelihood of getting a position as a machinist. You can get a CNC (Computer Numerically Controlled) or NIMS (National Institute for Metalworking Skills) certification within the three months you are here" (MPD2, February 10, 2017). There was also a reference to the on-site employee specialist within observations of the dental, medical assistant, and welding programs. Instructors explained to the adult learners that the site's employee specialist was a source for current and former adult learners for potential employment opportunities, resume building, and interview skills. Additionally, an instructor within the Manufacturing and Product Design pathway referred to a prior workshop held for the adult learners, as well as upcoming workshops held at the employee specialist's office.

A primary theme among the observational notes for motivation was employment.

Adult learners across all pathways were interested in their courses for employability within their job sector. The skill level of adult learners varied, but the repeating theme was to augment skills in their current capacity or to begin a career within an industry with significant job growth. Sub-themes were money or income driving their decision to pursue their program. “I’ve been a home caregiver. Having a CNA license is the first step to nursing, which pays really good which is why I’m here” (HSMT1, February 10, 2017). A reference to salary advancement or income potential was shared by the instructor to adult learners in 12 of the 15 participants.

Orientation to learn. All classrooms had current, industry-relevant equipment. Within every observation, adult learners applied an element from the direction instruction received towards a hands-on application. Instructors used a list of performance-based assessments to guide the hands-on application of the lesson. Performance-based assessments are required for licensure within their designated program. Although the classes build on previous knowledge, the adult learners were given options to demonstrate learned skills. For example, the highest scoring instructor (92) from Health Science and Medical Technology program had a list of tasks on the board for the adult learners to work through with a partner as both a patient and professional within 20 minutes. Tasks included taking blood pressure, temperature, and pulse. The adult learners were able to practice the three tasks listed in any order and with a partner. The instructor walked around the classroom, redirecting and encouraging the adult learners as they practiced. Essential skills training was reinforced by instructors, with soft skills or learning objectives to master as outlined by their certification/licensure.

Emerging themes from the Orientation to Learn principle was evidenced by the current industry equipment in each classroom and industry clothing worn by both the adult learners and instructional staff. Every classroom visited had equipment, furniture, and supplies specific to the

program within the pathway. Within the Health Science and Medical Technology program, Medical Assistant and Certified Nurse Assistant programs had classrooms that were specific to their programs' learning objectives for certification. The Certified Nurse Assistant program mirrors a patient care setting, with a hospital-grade bed, bedding, serving trays, and privacy curtains. The Medical Assistant program had a setting resembling a doctor's office, with partitioned areas with each having an examination table, trays, and carts. Industry-appropriate clothing was also evident within program. For example, everyone within the Health Science and Medical Technology program wore scrubs; steel-toe shoes with long-sleeve shirts were worn by everyone in the Manufacturing and Product Design and Transportation program; and clothing appropriate to indoor and outdoor gardening was evident in the Agriculture and Natural Resources program.

Readiness to learn. Adult learners could apply previous experience both professionally and personally within their programs. Manufacturing and Product Design and Transportation programs had adult learners within the respected fields seeking additional credentialing to advance within their organization. Questions posed by instructors within the Health Science and Medical Technology program connected personal experiences to patient care, as documented in Dental, Certified Nurse Assistant, and Medical Assistant program observations. Moreover, Agriculture and Natural Resources, Information and Business and Finance, Public Service, and Arts, Media, and Entertainment programs connected personal reflections as a customer or client within their program as a tool to provide solutions to posed challenges within their careers.

An observable option for adult learners in the delivery of content is hybrid courses for some programs in addition to seat-based instruction. Hybrid courses provide content in a learning management system, which is self-paced for the adult learner under the parameters set out by the

instructor and program guidelines. Instructors also stated that the utilization of technology was essential for professional development in all observed programs and continuing education, in general. “Remember, CANVAS is the same learning system the local colleges use. This is why we use it, and when you continue your education you will be successful because we have used it here” (PS1, February 6, 2017). Hybrid courses provide the flexibility for the adult learner to access the curriculum online when convenient for them. This allows the CTE instructor to focus the face-to-face time on essential skills for the particular program, executed through hands-on application and demonstrations of competency by the adult learner. A general theme is the connection of continuing education to online learning, which was evident in the instructors’ reference to the utilization of technology within their program through the learning management system, and as an essential skill in the workplace.

Learners’ experience. Adult learners engaged in pairs and small groups working through scenarios and case studies, such cooperative learning provided students with the opportunity for the discussion of shared experiences between the adult learners and with the instructor. Instruction was based on previous lessons or knowledge; there was evidence of sequential learning with lectures referring to previous content and it serving as a foundation for the observed lesson. Adult learners had access to the instructors’ email, phone, and helpdesk through the online learning management system. The instructors walked around the area, making themselves available for adult learners to ask clarifying questions. Furthermore, supplemental texts were available and used by adult learners within the observations.

An evident theme was the variety of options to learn. Adult learners have the flexibility to work through content and demonstrate competency within the deadlines established by the CTE instructor as outlined by the program’s certification or licensure mandates. One of the subthemes

for learning was the utilization of technology. Every classroom in a pathway had a smartboard. Hybrid classes had an online learning management system, virtual internships, and individual project-based learning with industry machinery and equipment. This further supported the theme of options to learn within the Learners' Experience principle.

Learners' self-concept. Overall themes that emerged from the Learner's Self-concept principle was a feeling of reward and satisfaction for adult learners to engage in real-life scenarios within their programs. Adult learners reported a feeling of being a trainee, not a student, because of the organization of the program. "I'm a Dental Assistant trainee, and if I do good I can have a career at the end of this. That's more than just being a student" (HSMT5, February 10, 2017).

All learners in every pathway demonstrated self-accountability and responsibility for acquiring and using industry safety standards. Safety training is required for all learners within the Manufacturing and Product Design and Transportation pathway. Completion of S/P2 (www.sp2.org), an online safety-training course, is a prerequisite prior to working on any equipment. In addition, Occupational Safety and Health Administration training is provided. Generally, the training is completed within the first month of the program. Adult learners can choose what is best for them to achieve skills among various instructional resources. These resources include supplemental textbooks, varied options to demonstrate competency, and the option of enrolling in a hybrid or seat-based program. Hybrid programs are offered within the Manufacturing and Product Design and Health Science and Medical Technology programs, which allow adult learners to work on their own within the parameters set by the CTE instructor.

An observer recorded that a Manufacturing and Product Design instructor created three sections within the online learning system to accommodate the needs of the adult learner. These

sections included the Computer Numerically Controlled (CNC) certification, the National Institute for Metalworking Skills (NIMS) certification; and the Science, Technology, Engineering, Art and Design, and Math (STEAM) certification. Additionally, the Medical Assisting program uses an online simulation as an internship option for adult learners who need further practice or cannot complete the required internship hours in person.

Need to know. A connection of content skills tasks relating to the program was evident within the observed lectures. Observations across all pathways had the question of “why” posed directly from the instructor or the adult learner. The question of why was asked for purposes of clarification “Now why is the multimeter so important in diagnostics?” (T1, February 11, 2017), and comprehension, “Why is using a variety of marketing strategies for your campaign useful?” (ICT, February 10, 2017). A theme observed within each participant was addressing the ‘need to know’ principle by having a continuous dialogue with the adult learners based on the questions of why. The question of why was given by both the CTE instructor and student in every observation, which served as the connection between content theory and each program’s practice of application with the industry equipment. Below is an excerpt from the data collection sheet from the research taken from notes of a manufacturing and product design classroom observation:

Why the students finished product is not up to industry compliance and standards are constantly discussed and looked at and explained. Students must pass industry welding test to be certified and certain mastery is expected and encouraged. Certifications improve hiring chances for pathway. (MPD2, February 10, 2017)

Research Question 4 sought to answer what do CTE instructors at an Adult School describe as their best practices as conceptualized by the California Standards of the Teaching Profession (2009)? The post-observation interviews were conducted by the principal investigator within seven days of the second observation at a time that was convenient for the participant. Most of the interviews took place within the participant's classrooms, as that was the location in which they felt comfortable. Twelve instructors were interviewed in their classrooms, with three meeting at a public location off-campus. Interviews averaged 45 minutes in length and the researcher hand-recorded during the interviews. Each participant had one interview, with notes completed on the template (Appendix C), and additional pages if necessary. Participants agreed to be recorded for their interview and understood that notes would be taken during the interviews.

Standard 1: Engaging and supporting all students in learning. An emerging theme was that all CTE instructors possess guidelines and rules of expectations for students. Interview data revealed that all CTE instructors advise adult learners during the first week about the expectations for the class. The guidelines and expectations of the adult learners are based on the instructors' assumptions of previous adult learners in their classrooms. "The challenge we have is the assumption that students believe they can come in and immediately begin the hands-on and whatever program it is" (MPD1, February 13, 2017). To support the adult learners, instructors addressed expectations of both the instructor and adult learner to explain the theory of the content area, safety, then connect with hands-on learning experiences.

A second theme was that instructors plan opportunities for the adult learners to work in collaborative groups and engage in hands-on learning whenever possible.

“I like to break up the information into smaller pieces or lessons, when it comes closer to the end of the year are you study guides and previously used tests, I have a lot of hands-on, hands-on with the equipment” (T3, February 12, 2017).

“I am still working with in the medical field during the day, and this has helped so much because the industry has changed so much because of technology” (HSMT2, February 13, 2017). “It’s rewarding to see students not only do it right but do it really well. They are teaching me a thing or two when using the tools in the garden!” (ANR1, February 14, 2017).

Standard 2: Creating and maintaining effective environments for student learning.

A consistent theme presented in most of the interview notes is that resources are available to bring industry-relevant supplies and equipment into the classroom. Instructors referred to the equipment, and an understanding of how equipment is provided with statements, such as “The school has provided the same equipment students will have in the workforce” (MPD1, February 15, 2017), and “I remember I’ve always had enough materials like gaming programs, MacBooks, and I think it’s because of the grant” (AME1, February 14, 2017). Equipment was stated explicitly by every participant when answering Standard 2: “We get dental equipment like the patient chairs, trays donated from business looking to upgrade their program” (HSMT 4, February 15, 2017), and “Haas donated a CNC machine and we are training their employees in our class” (MPD2, February 15, 2017).

In discussing resources available, the connection that instructors maintain with industry was another theme that appeared. All instructors continue to work within their career paths and have referred to this as constituting a part of their instructional success.

“I am still a professional, and that’s very important to me as an instructor so I stay relevant and know what is being used, use it correctly, and can share industry

expectations with my students using current equipment especially in IT” (ICT, February 15, 2017).

This may be due, in part, to internship hours mandated by certain licensures. This was most evident in the Health Science and Medical Technology instructors. Supporting this, instructors stated “when we get to clinical, it’s my reputation on the line because I know these businesses” (HSMT2, February 13, 2017), “I work part-time with the CNA internship site, so the interns get to do more because of my position” (HSMT1, February 10, 2017).

Standard 3: Understanding and organizing subject matter for student learning.

Five of the seven CTE pathways lead to a state license. All these programs leading to state licensure follow guidelines established by the state or governing accreditation body. These guidelines include set hours, tasks, skill sets, or learning objectives that need to be mastered at an established rate. For example, Health Science and Medical Technology instructors shared that as a recognized educational institution among the various state boards, the boards dictate what to teach through curriculum such as guidelines, lesson plans, and assessments. “Department of Health outlines the CNA [certified nurse assistant] curriculum so it tells you what to teach every day to meet the 60 hours of classroom instruction and 100 hours of clinical” (HSMT1, February 10, 2017). “MA [medical assistant] provides the education for students to apply for certification so we have strict outlines from the state. They have to take the MA Clinical, Office Administration, and Internship courses to be signed off” (HSMT3, February 20, 2017). “The Dental Assistant program is approved by the state board, and it tells exactly what needs to be taught and we provide CPR training for the adults. There’s also a separate infection control course taught outside of my class” (HSMT5, February 16, 2017). Like Health Science and Medical Technology, instructors in Manufacturing and Product Design and Transportation

shared using the curriculum by the licensing organizations like National Institute of Metalworking Skills (NIMS) for Manufacturing (MPD1, February 13, 2017), and American Welding Society's Certified Welder Program (MPD2, February 15, 2017).

Two of the three programs within the Transportation pathway do not lead to national or state licensure. In lieu of a license, the Auto Body and Auto Paint programs collaborate with industry partners to provide relevant, in-demand skills. A school-based certification, Certificate of Proficiency, certifies the mastery of these skills and is recognized by the community. "Our partners know that a certificate from our program means they know how to use tools and equipment right. We train them the right way to use the tools" (T3, February 12, 2017). "I took the program here 30 years ago and as a business owner I knew the education was top-notch because what was being taught was current" (T2, February 16, 2017).

Standard 4: Planning instruction and designing learning experiences for all students. All programs follow established guidelines, which include lessons and objectives by the industry and state CTE standards. Programs not leading to licensure or certification still use industry benchmarks, although not formally. Throughout all program pathways, most instructors reported an approach to instruction as hands-on, with industry skills being introduced in the lecture and immediately followed with a pragmatic application. Supporting statements from instructors are, "I have hands-on every day in the shop even if we are preparing for the exam" (T2, February 16, 2017) and "Besides the state guidelines, I think of what I did when I started out and always practice with the medial equipment" (HSMT 4, February 15, 2017). Besides instruction, the Agriculture and Natural Resources instructor runs a floral business, which all students participate when an order is placed. "We get the theory of horticulture and then we

make it by building on our campus in the garden and completing floral arrangements for graduations, conferences, and other local events” (ANR1, February 14, 2017).

A subtheme is the collaboration within their specific program. This collaboration is achieved through emails, phone calls, conversations on campus, and at staff meetings. Instructors within the Certified Nurse Assistant program meet monthly, as both participants explained in their interviews (HSMT1, February 10, 2017; HSMT 4, February 15, 2017). Transportation instructors have more frequent interaction due to location and projects their adult learners undertake. Pathway instructors can talk at break and before or after class. T2 and T3 have their shops next to each other, with T1 across a parking lot. “Auto body and paint go together, so it makes sense we work together on projects for our adults. It’s good for them to see no one has all the answers, and how to ask for help” (T3, February 12, 2017).

Standard 5: Assessing students for learning. All Health Science and Medical technology programs, medical assistant, certified nurse assistant, and medical assistant, have culminating examinations which mirror state board examinations. Each of the three programs have quarterly examinations, which are based on the industry’s licensure or certification objectives. These examinations use both written and skills based to assess the learner’s knowledge of equipment, proper procedures, and general patient care. “I use student reviews, quizzes, checking for comprehension, canvas online has built-in quizzes and short answers, so I can see if they really understand what is being asked or if they are guessing.” (HSMT3, February 16, 2017). A common thread among instructors within this pathway value the hands-on assessments more than the written ones. “Skills will make or break a student because it is about helping the patient” (HSMT2, February 13, 2017), also “You can memorize it all, but when it

comes to doing it you have to know the right equipment and how to use it. We are dealing with people's loved ones" (HSMT3, February 20, 2017).

Programs not leading to a license or certification still employ industry guidelines for assessment. This theme is further supported by the instructors reporting quizzes, which are both written and oral, given after each module of learning objective. "I give them scenarios using materials to generate ideas of how to do a certain type of marketing plan. I used sports drinks and did a blind taste test with them to get them in the consumers mindset" (BF1, February 17, 2017).

Additionally, instructors use a variety of assessments to target gaps in their instruction and struggling adult learners. "If most of my students miss a question, that's on me and I have to reteach it in a way they comprehend" (PS1, February 10, 2017). Instructors used assessment as self-reflection, and the practicality of running a business: "If I can't get students to master a skill, it impacts my program because people won't return to the school for business" (ANR1, February 14, 2017). In respect to supporting struggling adult learners, HSMT5 described struggling adult learners in the interview as:

They are the ones who aren't getting the concept when I ask them or by their work completed. I reach out to them because they have to have a minimum score because I have to report to the state board. If they don't meet the minimum they cannot continue and get dropped. (HSMT5, February 16, 2017)

The instructor further explained as programs are fee based, the adult learners are motivated and want to be there. Gaps in study habits or proper equipment were also identified by two instructors from other pathways (AME1, February 14, 2017, ICT, February 15, 2017). The two instructors explained that some of their adult learners needed help in time management, note taking, and access to current equipment beyond the classroom setting.

Standard 6: Developing as a professional educator. When instructors were asked how they keep current in their career, the most evident theme across all instructors was the reported access to professional development within their industry sector. Supporting data from interviews included statements of “I seek out professional development, professional development is encouraged by the school and sometimes it is also part of our formal evaluation” (ANR1, February 13, 2017), “PD is really supported for teachers; there’s really no excuse to be stagnant”(AME1, February 14, 2017), and “We always get to go to the auto conferences that make sense for us” (T2, February 16, 2017).

Additionally, 13 of the 15 participants specifically referenced equipment training. The medical assistant program wanted to implement virtual simulators for patient care and used the equipment and program to determine its benefit (HSMT2, February 13, 2017; HSMT3, February 20, 2017). MPD1 shared that the training and exam was paid for on behalf of the school. “Instead of hiring out, they invested in me to train using current equipment and be a certified instructor; I just needed to ask” (MPD1, February 13, 2017). “Anything new that I can bring in, I get to be trained. I just finished smog certification and know how to use an EIS, Emissions Inspection System, which I now show to my students” (T1, February 11, 2017).

Triangulation of Data

Within this mixed-methods research design, the triangulation of data was done to compare qualitative data collected from observational notes aligned to the six principles of Adult Learning Theory (M. Knowles, 1984) and instructor interviews aligned to the California Standards for the Teaching Profession (2009), with quantitative nominal data from a Classroom Observation Checklist based on known best practices as conceptualized by Bice and Gatlin (2008). The exploration of M. Knowles’s Adult Learning Theory (1985) in conjunction with the

California Standards for the Teaching Profession (2009) has not been researched in any form of publication. The significant theme from all three sources of data was the use and access of equipment by both students and instructors of adult learners. The quantitative Classroom Observation Checklist was the foundation of this research as it was continually supported through qualitative observational notes and instructor interviews.

Summary of Major Findings

Research Question 1 of what are the licensure pass rates among adult learners attending post-secondary CTE courses at the ABC District Adult School, was inconclusive due to incomplete data. At the ABC District Adult School, adult learners participating in CTE programs are eligible for state-issued certifications in Certified Nursing Assistant, Dental Assistant, Home Health Aide, Machining, Medical Assistant, Pharmacy Technician, and Welding programs after successfully completing the course requirements. There was no tracking of certifications “due to limited staff and lack of a system for monitoring adult learners in the long term after their exit from the program” (ABC Adult School, 2015, p. 111). What was reported are licensure passing rates and employment for Pharmacy Technician and Certified Nurse Assistant programs. With both programs currently under new staff, limited information was available as to why employment rates were low.

Findings were present in support of Research Question 2, to what extent do CTE instructors at the ABC Adult School follow known best practices as conceptualized by Bice and Gatlin (2008) in the Classroom Observation Checklist. The observational checklist tool divided the observation into two categories: body of lesson and classroom environment. The highest observational subcategory was within classroom environment, with equipment having the highest observable occurrences. Equipment had the highest average score of observable

frequency, with it being evident in 85.3% of the classroom observations. Data analysis also exhibited indicators of flexible configurations for group work, industry equipment, accessible technology, accessible resource materials, and whiteboards.

Findings were present in support of Research Question 3, to what extent do CTE instructors at the ABC Adult School follow known best practices as conceptualized by M. Knowles (1985) as the six principles of Adult Learning Theory? Orientation to Learn and Learners' Self-concept were the strongest principles to emerge from the observational data. Supporting observational notes stated, "In busy medical offices there are always opportunities for employees to solve and the class is taught with practicing these possible problems and learning how to work through them" (HSMT2, February 13, 2017).

An overall sub-theme drawn from the observational notes was the practice of hands-on, on-the-job skills with industry equipment. Recorded observational notes from the Health Science and Medical Technology interviews stated, "The class has a mock medical area that students practice on industry equipment and with mannequins" (HSMT1, February 10, 2017), and "The lectures, demonstrations and practicing of task in the mock medical area help students master skills" (HSMT 4, February 15, 2017). In addition, observational notes from ANR1 noted the use of hand tools, power tools, and motorized equipment being taught in addition to prior knowledge learned on jobs or at home (ANR1, February 13, 2017).

Finding were present for Research Question 4, what do CTE instructors at the ABC Adult School describe as their best practices as conceptualized by the California Standards for the Teaching Profession (2009). Standard 2: Creating and Maintaining Effective Environments for Student Learning and Standard 3: Understanding and Organizing Subject Matter for Student Learning had the richest qualitative data. The overall theme to emerge from the post-observation

interviews of career technical instructors was the hands-on application opportunities with equipment for both instructors and adult learners. Providing numerous opportunities for the adult learners to demonstrate an understanding of the content was critical for deeper comprehension and retention, thus providing the skill sets necessary for licensure and potential success within the selected career field. Furthermore, the instructors maintaining work within their respected career field extended the best practices of hands-on learning to the instructors themselves.

Table 8

Summary of Research Questions and Major Themes

Research Question	Data Source	Themes	Subthemes
RQ1: What are the licensure pass rates among adult learners attending post-secondary CTE courses at ABC Adult School?	<ul style="list-style-type: none"> • Quantitative 	<ul style="list-style-type: none"> • Inconclusive 	
RQ2: To what extent do CTE instructors at ABC Adult School follow known best practices as conceptualized by Bice and Gatlin (2008) on the Classroom Observation Checklist?	<ul style="list-style-type: none"> • Quantitative • Nominal • Observation Checklist (Bice & Gatlin, 2008) 	<ul style="list-style-type: none"> • Equipment 	<ul style="list-style-type: none"> • flexible configuration • industry equipment • available technology • resources, material • whiteboards
RQ3: To what extent do CTE instructors at ABC Adult School follow known best practices as conceptualized by Knowles's (1984) six principles of Adult Learning Theory?	<ul style="list-style-type: none"> • Qualitative • Observation Notes (M. Knowles, 1984) 	<ul style="list-style-type: none"> • Orientation to learn • Learners' self-concept 	<ul style="list-style-type: none"> • Hands-on training • Equipment
Q4: What do CTE instructors at ABC Adult School describe as their best practices as conceptualized by the California Standards for the Teaching Profession (2009)?	<ul style="list-style-type: none"> • Qualitative • Interview Notes (CSTP, 2009) 	<ul style="list-style-type: none"> • Sustaining effective environments for student learning • Understanding, organizing content for student learning 	<ul style="list-style-type: none"> • Hands-on training • Equipment

Chapter 5: Summary, Conclusions, and Recommendations

Summary

The ABC Adult School has been serving the community since 1937, with over 20 CTE programs offered, in addition to adult basic education, adult high school diploma, and English as a Second Language. AB104 identifies seven program areas supported by Adult Education Block Grant funds. One of the seven designated program areas is CTE programs, which are short-term with high employment potential. AB104 further outlines the performance measures of CTE programs as being the completion of post-secondary certificates, degrees, or training programs. However, additional data have yet to be collected to determine the best practices of the school's CTE instructors. Therefore, to sustain and increase passing rates on licensure exams, support campus-wide professional development, and secure state funding under AB104 to continue CTE for the adult community, there is a need to study instructional practices of CTE instructors.

The purpose of this exploratory mixed-methods research study was to examine the instructional best practices of CTE instructors within a public, post-secondary-school setting. Within professional medical parameters, Mold and Gregory (2005) defined best practice research as a "solution-focused approach to the investigation of the processes of clinical care that appears to be effective and efficient" (p. 134). Parallels can be drawn in education with a solution-focused approach to the investigation of instructional best practices that are both effective and efficient, as evident by standardized assessments leading to recognized certifications. Mael's (2000) book *Lifelong Learning at Its Best: Innovative Practices in Adult Credit Programs* provides a national collection of proven learning program models for adult learners and educational strategies. Furthermore, to illustrate the instructional practices of lifelong learners, data from a national study on behalf of the Commission for a Nation of Lifelong Learning were

used (Mael, 2000). Although templates are supplied for adult best practices, further research is needed to determine what best practices specifically occur in CTE classes for adults.

The goal of this exploratory mixed-methods study was to examine the instructional best practices of CTE instructors within a public, post-secondary school setting based on M. Knowles's (1980) principles of Adult Learning Theory, and the California Standards for the Teaching Profession (2009). Three instruments were utilized to capture the instructional practices of the participants through observations and interviews: two instruments were used for the instructional observations of the participants, with the third instrument utilized for the post-observation interview with the same participants.

The ABC Adult School is one of the most comprehensive post-secondary institutions in the county, offering CTE, adult basic education, adult high school diploma, and English as a Second Language. Adult learners have access to career training normally only found at community colleges and private career-training institutes at a fraction of the cost of other post-secondary public and private educational institutions. Careers in the medical field are featured most prominently at the ABC Adult School, which include CTE training to become a medical assistant, medical assistant administrative front office, medical assistant administrative back office, certified nurse assistant, pharmacy technician, dental assistant, advanced computer technologist, automotive technician, and welder (ABC Adult School, 2015).

The ABC Adult School serves the adult population of the ABC Union High School District, which includes the communities of Oxnard, Port Hueneme, and Camarillo. The majority of programs are offered at the main school campus. In addition, satellite locations for dental assistant, medical assistant, and welding programs are located within 10 miles of the main campus. Collective enrollment for the 2013–2014 fiscal year was 6,440 adult learners attending

ABE/ASE, ESL/citizenship, adults with disabilities classes, and CTE programs (ABC Adult School, 2015).

There is no established site-based class minimum or cap, due to each program's guidelines in accordance with their program accreditation bylaws. In enrichment courses, the class size averaged 25 adult learners. Class size in career-technical programs, however, such as machine technology and welding, was closely monitored to guarantee student safety. In lieu of apprenticeships, the ABC Adult School offered extensive externships within designated programs in accordance with state and national certification. These programs include medical assistant, certified nurse assistant, pharmacy technician, and dental assistant (ABC Adult School, 2015).

According to self-reporting upon enrollment, 2014–2015 student demographic records showed that the student body at the ABC Adult School was predominately Hispanic, being 86%, and very closely divided between male, at 45%, and female at 54%. There have been slight variances in gender distribution over the years, i.e., in the past, there were a few more male than female adult learners, while the reverse has been the case over the past four years. This trend seems to be increasing by a small amount annually (ABC Adult, 2015).

Participants for this research were educators within an instructional setting of CTE. Within this alternative educational organization, career technical educators are instructors working at a post-secondary public school whose programs prepare adult learners for industry-recognized certifications. For the purpose of this study, participants were part-time and full-time instructors from the ABC Adult School. The ABC Adult School had 52 instructors with 42 being female and 10 being male. Of those 52, 26 were identified as current instructors of pathway courses.

Maximum variation sampling, a type of purposive sampling technique (Creswell & Plano 2011), was utilized to seek participants who had a minimum of five years of instructional experience with adult learners. The sample size of CTE instructors for this study was 15, and participants were instructors employed during the 2016–2017 academic school year. The sample size of 15 was appropriate, so that at least half of the potential participating CTE instructors were observed across the spectrum of career pathways to create a more accurate picture of instruction at the ABC Adult School. Furthermore, there were two observers visiting the same instructor on different days to ascertain the reliability of the instructor’s techniques. Because this research intended to capture data from instructors in various career pathways or content areas, maximum variation sampling for participants was utilized to capture common themes evident across data sets. For quantitative research question two and qualitative research question one, data collection was completed by a principal and assistant researcher during two separate classroom observations, with each observation completed within seven days of each other. Within 48 hours of the last observation, the post-observation interviews were completed.

This exploratory mixed-methods study included the following four research questions:

- RQ1: What are the licensure pass rates among adult learners attending post-secondary CTE courses at the ABC District Adult School?
- RQ2: To what extent do CTE instructors at the ABC Adult School follow known best practices as conceptualized by Bice and Gatlin (2008) in the Classroom Observation Checklist?
- RQ3: To what extent do CTE instructors at the ABC Adult School follow known best practices as conceptualized by M. Knowles (1984) as the six principles of Adult Learning Theory?

- RQ4: What do CTE instructors at the ABC Adult School describe as their best practices as conceptualized by the California Standards of the Teaching Profession (CSTP, 2009)?

RQ1 could not be answered quantitatively, as the ABC Adult School has not designed a process for obtaining licensure pass rates among adult learners. Licensure pass rates were available for two of the post-secondary CTE programs, (certified nurse assistant and pharmacy technician). Question two was answered quantitatively from the data obtained from the Classroom Observation Checklist performed by the principal and assistant researcher. The mean scores of the 10 categories within the observation checklist were compared and ranked to discern the classroom behaviors of the post-secondary CTE instructors.

To answer the two questions in the qualitative phase of this study, data for question one was obtained using a classroom observation data collection form based on the principles of Adult Learning Theory (Knowles, 1988), which was performed concurrently with the observation checklist. Data for the second qualitative research question were collected using a post-observation interview data collection sheet aligned with the California Standards of the Teaching Profession (2009).

Data were categorized and coded to identify themes and trends from both observations and interviews of the participants. Where nominal data were collected with the checklist, the qualitative questions provided a deeper understanding of the instructional practices of post-secondary CTE instructors.

Conclusions

Based upon the findings of the study, the following five conclusions were drawn:

Conclusion 1. Post-secondary CTE instructors at the ABC Adult School created a positive school culture for CTE through enthusiasm for their technical area and use of career

appropriate equipment. All fifteen participants expressed enthusiasm during the classroom observations and post observation interviews with recorded statements of “I’ve worked at other adult schools and have never felt more supported by colleagues and administration than I do here” (BF1, February 17, 2017) and “It doesn’t even feel like work. I get to do what I love and teach those who are equally or more passionate than me!” (AME1, February 14, 2017).

Observations of the classrooms recorded that 85.3% of the classrooms were equipped with equipment related to the selected career training by the adult learners. The faculty utilized this equipment for an instructional environment for their adult learners. Observations indicated that the environment included contemporary industry equipment in a work-like configuration. Participants shared their acknowledgement for relevant equipment by stating, “The school has provided the same equipment students will have in the workforce” (MPD1, February 15, 2017), and “Our partners know that a certificate from our program means they know how to use tools and equipment right. We train them the right way to use the tools” (T3, February 12, 2017).

“I am still a professional, and that’s very important to me as an instructor so I stay relevant and know what is being used, use it correctly, and can share industry expectations with my students using current equipment especially in IT” (ICT, February 15, 2017).

The Adult Learning Principle of M. Knowles (1988) most evident in classroom observations was ‘orientation to learn’. Observational data showed classrooms mirroring industry guidelines, orienting the adult learners immediately as beginners, or trainees of their selected career pathway. Additionally, interviews of CTE instructors further supported this finding as Creating and Maintaining Effective Environments for Student Learning, as conceptualized by the California Standards for the Teaching Profession (2009) and was the

strongest standard to emerge from the data findings. “The school has provided the same equipment that my students will have in the workforce” (MPD1, February 20, 2017).

Adult learners are engaged when there is an environment that is conducive to adult learning in their selected field of study. This environment serves both work and human purposes. Interaction of work and human purposes ensures greater learning in the organization (M. Knowles, 1980). It can be further asserted that an organization is not there only to deliver organized learning activities, but also to create an environment that facilitates learning. Knowles suggested that an organization should create policies with the intention to document and encourage adult learning, which also supports the conclusions of Smith’s (2014) findings in *90 Instructional Strategies for the Classroom*. The instructor should create supportive environments through showing respect for individuals and belief in their learning potential. This can be achieved by calling trainees by their names, listening to their questions and opinions, being courteous and patient, and assuring them that mistakes are an integral part of the learning process. The instructor can also seek opportunities to validate the learners and encourage them to support each other.

Conclusion 2. Post-secondary CTE instructors at the ABC Adult School followed the six principles of M. Knowles (1984) Adult Learning Theory. Orientation to Learn and Learners’ Self-concept were most evident. Instructors used industry equipment, and provided hands-on training almost daily, throughout the pathways. Recorded observational notes stated, “The class has a mock medical area that students practice on industry equipment and with mannequins” (HSMT1, February 10, 2017), “The lectures, demonstrations and practicing of task in the mock medical area help students master skills” (HSMT 4, February 15, 2017), and “In busy medical offices there are always opportunities for employees to solve and the class is taught with

practicing these possible problems and learning how to work through them” (HSMT2, February 13, 2017).

All classrooms had current, industry-relevant equipment. Observational notes detailed the use of hand tools, power tools, and motorized equipment being taught in addition to prior knowledge learned on jobs or at home (ANR1, February 13, 2017). Industry clothing was worn by both the adult learners and instructional staff. Every classroom visited had equipment, furniture, and supplies specific to the program within the pathway. Within the Health Science and Medical Technology programs, each classroom mirrored a patient care setting, with a hospital-grade bed, bedding, serving trays, and privacy curtains, partitioned areas with each having an examination table, trays, and carts. Steel-toe shoes with long-sleeve shirts cotton shirts were worn by everyone in the Manufacturing and Product Design and Transportation program, and clothing appropriate to indoor and outdoor gardening was evident in the Agriculture and Natural Resources program.

This conclusion supports previous research of the importance of the integration of theoretical coursework with career technical or practical courses into a single course and curriculum to improve career and technical education (Carter & Anders, 1996, Howey & Zimpher, 1989, Lynch et al.,1994). Furthermore, CTE programs are known for experiential learning. This philosophy of experiential learning is popular in mainstream education related to medicine, law, and business (Darling-Hammond, 2006), which parallels the instruction of adults in CTE programs in the same field. Because of this, CTE teachers utilize constructivist and contextual learning approaches, which are also grounded in Andragogy (M. Knowles, 1984). These approaches have helped to integrate novel information and experiences with their previous

learning (Ross-Gordon, 2011), thus supporting the adult learner's Orientation to Learn (M. Knowles, 1984).

The current research documented the variety of hands-on learning training methods which included demonstrations, skills practice, internship or clinical hours, and it aligns with the research of Goh (2013), J. G. Knowles and Cole, (1996), and Wang (2011). According to Hirshy, Bremer, and Castellano, (2011), career technical instruction prepares teachers to come up with unit plans that incorporate instructional strategies; outcome-based objectives that engage the students in learning, ethical, legal and safety considerations; and appropriate student assessment techniques.

Conclusion 3. Post-secondary CTE instructors at the ABC Adult School create a relevant instructional environment for adult learners paralleling best practices of Standard 2: Creating and Maintaining Effective Environments for Student Learning and Standard 3: Understanding and Organizing Subject Matter for Student Learning of the California Standards for the Teaching Profession (2009). Instructors consistently create hands-on training, with current industry equipment first modeled by the instructor, then practiced by the adult learner for mastery. "The school has provided the same equipment students will have in the workforce" (MPD1, February 15, 2017), and "I remember I've always had enough materials like gaming programs, MacBooks, and I think it's because of the grant" (AME1, February 14, 2017). Equipment was stated explicitly by every participant when answering Standard 2: "We get dental equipment like the patient chairs, trays donated from business looking to upgrade their program" (HSMT 4, February 15, 2017), and "Haas donated a CNC machine and we are training their employees in our class" (MPD2, February 15, 2017).

Standard 3 was evident with instructors developing performance-based assessments which train adult learners for licensure and industry. Five of the seven CTE pathways lead to a state license. Programs leading to state licensure followed guidelines established by the state or governing accreditation body. These guidelines included set hours, tasks, skill sets, or learning objectives that need to be mastered at an established rate. “Department of Health outlines the CNA [certified nurse assistant] curriculum so it tells you what to teach every day to meet the 60 hours of classroom instruction and 100 hours of clinical” (HSMT1, February 10, 2017). “MA [medical assistant] provides the education for students to apply for certification so we have strict outlines from the state. They have to take the MA clinical, Office Administration, and Internship courses to be signed off” (HSMT3, , February 20, 2017). “The Dental Assistant program is approved by the state board, and it tells exactly what needs to be taught and we provide CPR training for the adults. There’s also a separate infection control course taught outside of my class” (HSMT5, February 16, 2017). Manufacturing and Product Design and Transportation shared using the curriculum by licensing organizations like National Institute of Metalworking Skills (NIMS) for Manufacturing (MPD1, February 13, 2017), and the American Welding Society’s Certified Welder Program (MPD2, February 15, 2017).

This study further supports utilizing the constructivist framework in post-secondary CTE instruction. Frameworks based on constructivism stress the importance of mutual planning among the learner and instructor, analysis of the adult learner’s interests, a cooperative learning climate, successive tasks for completing objectives, and learning objectives based on an analysis of the learner’s interest. The association between constructivism and andragogy are the individual application of the material, inclusion of the learner, and engaging in a deeper understanding of content.

According to Hyerle (1996), constructivist approaches, such as cooperative learning and portfolio assessment, are already being utilized in schools, but most of these “create the environment for constructivism but do not center explicitly on how an individual learner constructs knowledge” (p. 15). Hyerle described how a variety of visual tools, such as brainstorming webs, thinking process maps, concept mapping, and utilizing multimedia through the Internet, are utilized to support the construction of knowledge. Stevenson (1994) and Billett (1993) advocated assessment of performance in multiple settings, attention to dispositional factors, including learner interests and ways of knowing, and combining constructivist practices with direct instruction for occasions in which the presentation of information or theory is necessary. In the contemporary world, the goal of constructivist teaching is to develop self-directed, yet interdependent, learners who can access and use a wide range of cognitive structures in order to transfer learning to contexts they have yet to encounter.

Conclusion 4. The Classroom Observation Checklist as conceptualized by Bice and Gatlin (2008) effectively captured instructional practices of post-secondary CTE programs. Based upon the instructor’s comments during the interviews, the Classroom Observation Checklist fully documented their instructional practices. The 10 categories captured their range of practice. The Classroom Observation Checklist has two categories, Body of Lesson and Classroom Environment with each having five sub-categories with subsequent observational behavior descriptors listed. Sub-sections of Body of Lesson included Lecture, Levels of Student Engagement, Flow of Lecture, Grouping, and Transition to Next Task. Sub-sections of Classroom Environment Are Use of Classroom Space, Equipment, Resources, Review, and Next Steps. The highest observational subcategory was within classroom environment, with equipment having the highest observable occurrences. Equipment had the highest average score

of observable frequency, with it being evident in 85.3% of the classroom observations. Data analysis also exhibited indicators of flexible configurations for group work, industry equipment, accessible technology, accessible resource materials, and whiteboards.

Prior utilization of the Classroom Observational Checklist by Bice and Gatlin (2008) revealed that other observers found the instrument to be comprehensive yet easy to use. In 2008 the Classroom Observational Checklist (Bice & Gatlin, 2008) was developed, presented, and utilized to support instructional practices of special and general education instructional staff. The Classroom Observational Checklist was used by five instructional coaches over 200 times collectively across seven comprehensive high school campuses in northern Los Angeles County. Research on CTE has asked for a well-developed framework that would allow researchers to develop better questions and methods to discern the context of the experience (Clift & Brady, 2005, Darling-Hammond, 2006). Instructional classroom observations are key in describing what happens in classrooms to delineate several issues of complexity that face practitioners (Good & Brophy, 2000, Ing, 2010, Meyer et al., 2011, Smith, 2006, Van et al., 2014). Observations are a fundamental component of the evaluation process, as they can be a reliable assessment of effective teaching. Further, Bartlett (2002) analyzed the available literature on post-secondary CTE teacher preparation and found inconsistency and a challenge to identify best practices. However, Bartlett could determine that programs should be flexible due to the wide-ranging levels of education and experience post-secondary educators have upon entry into the field.

Within this study, the Classroom Observation Checklist as conceptualized by Bice and Gatlin (2008) effectively captured instructional practices of post-secondary CTE programs thus contributing to the need for a framework to describe the experience of adult learning. This study further supports the accuracy of capturing nominal data from a classroom observation.

Conclusion 5. Pass rates among adult learners attending post-secondary CTE courses at the ABC District Adult School are not known. Therefore, definitive conclusions establishing a baseline for possible correlation to instructional practices conceptualized by M. Knowles (1985), Bice and Gatlin (2008), and the California Standards for the Teaching Profession (2009), cannot be drawn due to the absence of critical data. The expectation from the research team holds that amendments regarding the conclusion and the rhetorical summary point of this research. Failure to do so would perpetuate the view that the research team had a selective bias towards the research findings that correlate to licensure pass rates among adult learners irrespective of the presented findings.

Further research into the accountability or outcomes of AB104 to include licensure-passing rates revealed they are not mandated, but optional. Mandated reporting includes the total number of students served, target number of students for the upcoming year as a new baseline for performance evaluation over the course of the AB104 Three-Year Consortia Plan. These are based on AB104 performance measures for “effectiveness and align with the Federal Adult Education program in WIA/WIOA, Title II performance measures that are available to date” (“Revised Guidance for the AEBG Annual Plan Template for Program Year 2015-16,” 2015, p. 4) as coordinated efforts move towards the alignment with systems including WIOA to restructure data collection and reporting. Section 6.3 of the AB104 Annual Plan Template for Program Year 2015–16 stated that stakeholders have the option of tracking “specific measures to gather meaningful and useful information about its plan efforts and have the option to share that information in their Annual Plan. This information may help others as we continuously improve our systems across the state” (AB104 AEBG Annual Plan Template, 2015).

Although not mandated by local or state funding, complete licensure passing rates among adult learners attending post-secondary CTE courses at the ABC District Adult School benefits CTE programs directly. Programs can utilize the passing rates to drive the alignment of assessments and aid in curriculum planning. Career pathways represented in this study were Agriculture and Natural Resources, Arts, Media, and Entertainment, Business and Finance, Health Science and Medical Technology, Information and Communications Technology, Manufacturing and Product Design, Public Service, and Transportation. Available data concerning licensure pass rates from ABC District Adult School were both from the Health Science and Medical Technology pathway, being certified nurse assistant and pharmacy technician. Certified Nurse Assistant program reported a state certification-passing rate of 81%, with 17 of 20 participants passing certification in 2015. In the same year, the pharmacy technician program reported 100% of participants become state certified.

Conclusion 6. ABC Adult School does not regularly hold advisory council meetings connecting post-secondary CTE programs and local business representatives. Given the current partnerships with VC Innovates and the county's Workforce Development Board, ABC Adult School has not fully invested in participating in county-wide advisory council meetings. There are established requirements for CTE advisory council meetings outlined for funding sources and school's accreditation, but there is no evidence that they are being followed.

Advisory councils are integral to the success of any CTE program as they provide a knowledgeable vantage point vital to the educational process. Local advisory councils form partnerships between education programs and the industries to ensure graduates have the skills set to enter and be successful within their career of choice. The necessity for these meetings for schools are outlined in sustaining state funding like Carl D. Perkins Funding (Threeton, 2007),

California Career Pathway Trust (AB86), Adult Education Block Grant (AB104), and for a school's accreditation, like WASC (ABC Adult School, 2015), to maintain credibility and fidelity of the educational programs.

Recommendations

Based upon the conclusions of the study, the following six recommendations are offered:

Recommendation 1. Further research at ABC Adult School needs to be conducted in order to ensure the timely replacement of outdated or worn equipment. Industry standard equipment to support student learning is critical for the success of the adult learners and the viability of ABC Adult School. ABC Adult School's CTE courses rely on maintaining current, relevant equipment and facilities. As technology advances, the ability to maintain the equipment-related advantages becomes the challenge in addition to providing employable skills.

Equipment had the highest average score of observable frequency, with it being evident in 85.3% of the classroom observations (Bice and Gatlin, 2008). Data analysis also exhibited indicators of flexible configurations for group work, industry equipment, accessible technology, accessible resource materials, and whiteboards. Every classroom visited had equipment, furniture, and supplies specific to the program within the pathway. Emerging themes from this research were documented by the current industry equipment in each classroom, hands-on application of skills taught, and appropriate industry clothing worn by both the adult learners and instructors.

Recommendation 2. Administrators of CTE programs should support continuing research looking for potential contributing factors that promote best instructional practices in CTE. The theoretical cases for applying M. Knowles's (1988) Adult Learning Principles to post-secondary CTE instruction need to be applied to further elucidate the relationship between adult

learning and post-secondary CTE instructional practices. ABC Adult School instructors may engage in instructional best practices aligned to andragogy (M. Knowles, 1984), but high standards should be maintained through ongoing, relevant professional development and classroom observations. The instructional leaders of ABC Adult School should conduct classroom observations aligned to andragogy (M. Knowles, 1984) with timely feedback to instructors. Given the necessity for the workforce to compete in a rapidly changing global economy, a series of longitudinal studies based on the passing rates, would document trends and thereby increase the potential that decisions regarding the CTE programs would be relatively current thus increasing the likelihood of employability.

Recommendation 3. ABC Adult School should continue hiring practices to grow the current culture of enthused faculty. All participants expressed a genuine excitement and enthusiasm for their content and for instruction. A positive workplace culture leads to increased productivity, better morale and reduces turnover. Taking the steps to ensure that a positive school culture is consistently present will have lasting impact of both staff and the experiences of the adult learners. Recruitment and interviews should include current instructors, to ensure the continuing of a positive school culture. Annual staff culture surveys should be included as well for proper feedback to administration.

Recommendation 4. ABC Adult School should provide continuous professional development to post-secondary CTE instructors on the elements of andragogy (M. Knowles, 1984) to further develop instructional best practices. ABC Adult School instructors informally engaged in the principles of andragogy (M. Knowles, 1988), and professional development affords the opportunity to build depth and capacity of CTE instructors at ABC Adult School. Supporting research from this study state, “In busy medical offices there are always opportunities

for employees to solve and the class is taught with practicing these possible problems and learning how to work through them” (HSMT2, February 13, 2017). Recorded observational notes from interviews stated, “The class has a mock medical area that students practice on industry equipment and with mannequins” (HSMT1, February 10, 2017), and “The lectures, demonstrations and practicing of task in the mock medical area help students master skills” (HSMT 4, February 15, 2017).

Recommendation 5. Because of conclusion 5, ABC Adult School should implement a data collection system to capture course and licensure passing rates of all CTE programs to establish a baseline for measuring progress. Having such a system in place would allow ABC Adult School to track progress longitudinally, and, in addition, would help identify curricular strands where adult learners are doing well and where they need improvement. Access to this data would help instructors redesign their lessons to address areas of historic weakness and develop more effective formative assessments. Post-secondary CTE programs can utilize the passing rates to drive the alignment of assessments and aid in curriculum planning.

Recommendation 6: ABC Adult School should participate in regular advisory council meetings to connect post-secondary CTE programs and local business representatives. Advisory councils create the potential for community involvement and contribution to CTE programs. This recommendation is based on the lack of supporting evidence in this study. The council for ABC Adult School should include representation from the local businesses that may potentially hire ABC’s graduates. These businesses have a vested interest in the program. Their support may include persons qualified to be faculty, financial support for equipment, suggestions for projects and places for internships.

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APPENDIX A

Research Instrument 1: Classroom Observation Checklist

<i>Body of Lesson</i>	<i>Classroom Environment</i>
<p>Lecture (direct instruction) <input type="checkbox"/> Use of visuals <input type="checkbox"/> CFU through random selection <input type="checkbox"/> CFU through students who raise their hands <input type="checkbox"/> Higher Order Questions (<i>Blooms Taxonomy</i>) <input type="checkbox"/> Ask students to take notes</p> <p>Levels of Student Engagement <input type="checkbox"/> Full engagement <input type="checkbox"/> Partial engagement <input type="checkbox"/> Limited engagement</p> <p>Flow of Lecture <input type="checkbox"/> Appropriate questions by students <input type="checkbox"/> Frequent disruptions <input type="checkbox"/> Good eye contact with students <input type="checkbox"/> Few distractions <input type="checkbox"/> Comprehensible input</p> <p>Grouping <input type="checkbox"/> Total group <input type="checkbox"/> Cooperative group <input type="checkbox"/> Small group (<i>pair share, trios, quads</i>)</p> <p>Transition to Next Task <input type="checkbox"/> Transitions in an appropriate amount of time <input type="checkbox"/> Transitions accompanied by clear directions <input type="checkbox"/> Teacher uses the tool of proximity <input type="checkbox"/> Students fully engaged <input type="checkbox"/> Students fully understand task(s) <input type="checkbox"/> Supplemental materials available <input type="checkbox"/> Students able to get help from teacher or peers <input type="checkbox"/> Teacher CFU <input type="checkbox"/> Students unclear about intended activity outcome <input type="checkbox"/> Expectations/Rubrics for activity explicitly made <input type="checkbox"/> Few disruptions <input type="checkbox"/> Medium disruptions <input type="checkbox"/> Lots of disruptions <input type="checkbox"/> Transitions take up a lot of time <input type="checkbox"/> Group work (<i>pairs or cooperative groups</i>) <input type="checkbox"/> Transition occurs smoothly <input type="checkbox"/> Students partially engaged <input type="checkbox"/> Students not engaged <input type="checkbox"/> Students lack directions for task <input type="checkbox"/> Key vocabulary/concepts identified for students <input type="checkbox"/> Intended outcomes of activity understood by all <input type="checkbox"/> Students clear about intended outcome</p>	<p>Use of Classroom Space <input type="checkbox"/> Word Wall <input type="checkbox"/> Daily Tasks <input type="checkbox"/> Focus Wall <input type="checkbox"/> Directions for Multi-tasks <input type="checkbox"/> Student Work Displayed <input type="checkbox"/> Classroom Norms posted <input type="checkbox"/> Rubrics/Grading Displayed</p> <p>Equipment <input type="checkbox"/> Flexible Configurations for group work <input type="checkbox"/> Industry Equipment <input type="checkbox"/> Technology Accessible <input type="checkbox"/> Resource Materials Accessible <input type="checkbox"/> Whiteboards</p> <p>Resources <input type="checkbox"/> Supplemental Materials <input type="checkbox"/> Elmo <input type="checkbox"/> Textbooks <input type="checkbox"/> SmartBoard/SmartTV <input type="checkbox"/> Realia <input type="checkbox"/> Computer(s) <input type="checkbox"/> Teacher Aides</p> <p>Review <input type="checkbox"/> Time allocated for reflection on day's activities <input type="checkbox"/> Students asked to reflect on what they have learned <input type="checkbox"/> Teacher and students together link lesson to industry <input type="checkbox"/> Review of day's lesson <input type="checkbox"/> Teacher summarizes the intent of lesson</p> <p>Next Steps <input type="checkbox"/> Homework explained <input type="checkbox"/> Advanced organizers handed out <input type="checkbox"/> Preview of next steps and expectations <input type="checkbox"/> Key vocabulary and concepts presented</p> <p>Researcher: _____ Teacher ID: _____</p> <p>Date: _____ Time: _____</p> <p>Course: _____ Minutes Observed: _____</p>

APPENDIX B

Research Instrument 2: Classroom Observation Data Collection Form

LEARNING PRINCIPLE	Motivation <i>Intrinsic motivation</i>	OBSERVATIONAL NOTES	<ul style="list-style-type: none"> • <i>Why are students interested in the content?</i> • <i>How does the content relate to learners personally?</i> • <i>Activities that promote self-reflection and application to content</i> • <i>Learners can think, share why topic is relevant to the content, relevant to personal goals</i> • <i>Discussions of job opportunities, opportunity for growth with skill-set/licensure being attained.</i>
	Orientation to learning <i>Problem-centered; task oriented</i>		<ul style="list-style-type: none"> • <i>What problem-centered opportunities are available for learners?</i> • <i>What opportunities for learners are task oriented?</i> • <i>Real life scenarios such as discussions, role-playing, assessments, think-pair-share</i> • <i>Lecture identifies direct relevance to learner</i>
	Readiness to learn <i>Real-life, direct Career application</i>		<ul style="list-style-type: none"> • <i>Examples of how the learner's experience is of value to the content</i> • <i>What options are available for students choose how content is delivered?</i> • <i>What flexibility is available (if possible) for students to work through content?</i> • <i>List/identify Real-life, current examples</i> • <i>List/identify direct Career application</i>
	Learner's experience <i>Application of experience</i>		<ul style="list-style-type: none"> • <i>How do learners share their experiences?</i> • <i>How are the learners able to connect their previous knowledge to the skill being taught?</i> • <i>What various resources are available for students?</i> • <i>Textbooks, online learning, use of electronics</i>
	Learner's self-concept <i>Self-accountability, responsibility</i>		<ul style="list-style-type: none"> • <i>How are learners able to show self-accountability and responsibility?</i> • <i>How are learners able to choose among various resources what is best for them to demonstrate skill?</i> • <i>How are students able to work on their own?</i> • <i>Are students able to self-direct through skills to master?</i>
	Need to know <i>Understands the why</i>		<ul style="list-style-type: none"> • <i>Are both students and instructor asking questions of WHY</i> • <i>Why use this concept?</i> • <i>Why does this concept/practice relate to content?</i> • <i>Why does the learner need to learn this?</i>
Teacher ID: _____ Date: _____ Time: _____ Course: _____			

APPENDIX C

Research Instrument 3: Post-Observation Interview Data Collection Sheet

<i>CSTP STANDARD/QUESTION</i>	<i>INTERVIEW NOTES</i>
Standard 1: Engaging & Supporting All Students in Learning <i>What are your best practices for instruction?</i>	
Standard 2: Creating & Maintaining Effective Environments for Student Learning <i>How do you feel about resources available to your class?</i>	
Standard 3: Understanding & Organizing Subject Matter for Student Learning <i>What helps you decide what to do while you are teaching?</i>	
Standard 4: Planning Instruction & Designing Learning Experiences for All Students <i>How do you decide what to teach?</i>	
Standard 5: Assessing Students for Learning <i>How do you assess your teaching?</i>	
Standard 6: Developing as a Professional Educator <i>How do you keep current in your career?</i>	
Teacher ID: _____ Date: _____ Time: _____ Course: _____	

APPENDIX D

Informed Consent

PEPPERDINE UNIVERSITY**INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES****POST-SECONDARY CAREER TECHNICAL EDUCATION INSTRUCTIONAL PRACTICES**

You are invited to participate in a research study conducted by Giselle Bice, M.A., and Diana Hiatt-Michael, Ed.D. at Pepperdine University, because you are a post-secondary career technical education instructor. Your participation is voluntary. You should read the information below, and ask questions about anything that you do not understand, before deciding whether to participate. Please take as much time as you need to read the consent form. You may also decide to discuss participation with your family or friends. If you decide to participate, you will be asked to sign this form. You will also be given a copy of this form for your records.

PURPOSE OF THE STUDY

The purpose of the study is to explore the best practices of post-secondary career technical education instructors.

STUDY PROCEDURES

If you volunteer to participate in this study, you will be asked to be observed twice by two different researchers and be interviewed once after the observations have been completed.

- The first observation will capture data using a checklist by an assistant researcher. The anticipated length is 45 minutes.
- The second observation will capture data using a notetaking template by the principal researcher. The anticipated length is 45 minutes.
- The post-observation interview will consist of six open-ended questions about your personal instructional practices. The anticipated length is 30 minutes with the interview being recorded and transcribed. You will have the opportunity to review the transcripts and make changes as needed.

POTENTIAL RISKS AND DISCOMFORTS

Potential and foreseeable risks associated with participation in this study include concerns about the contribution of time and discomfort from having an observer in the classroom. In addition, any discomfort asking questions about their work. Data from the observations are held in strict confidentiality, with the opportunity for participant's data to be reviewed. If the subject agrees to be audio recorded, the recording will be destroyed. It is anticipated the turnaround will be 48 hours to ensure protection of confidentiality.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

While there are no direct benefits to the study participants, there are several anticipated benefits to society which include identifying the best instructional practices of Career Technical Education which can benefit teacher training, professional development, and community awareness. Through the observations, the county may share their best practices with other instructors.

PAYMENT/COMPENSATION FOR PARTICIPATION

There will be no monetary compensation for participation of this study.

CONFIDENTIALITY

I will keep your records for this study confidential as far as permitted by law. However, if I am required to do so by law, I may be required to disclose information collected about you. Examples of the types of issues that would require me to break confidentiality are if you tell me about instances of child abuse and elder abuse. Pepperdine's University's Human Subjects Protection Program (HSPP) may also access the data collected. The HSPP occasionally reviews and monitors research studies to protect the rights and welfare of research subjects.

The data will be stored on a password-protected computer in the principal investigators place of residence. The data will be stored for a minimum of three years. The data collected will be coded, de-identified, identifiable, and transcribed.

PARTICIPATION AND WITHDRAWAL

Your participation is voluntary. Your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study.

ALTERNATIVES TO FULL PARTICIPATION

The alternative to participation in the study is not participating or completing only the items which you feel comfortable. Your alternative is to not participate. Your relationship with your employer will not be affected whether you participate or not in this study.

EMERGENCY CARE AND COMPENSATION FOR INJURY

If you are injured as a direct result of research procedures, you will receive medical treatment; however, you or your insurance will be responsible for the cost. Pepperdine University does not provide any monetary compensation for injury.

INVESTIGATOR'S CONTACT INFORMATION

I understand that the investigator is willing to answer any inquiries I may have concerning the research herein described. I understand that I may contact Diana Hiatt-Michael, Ed.D. at diana.michael@pepperdine.edu if I have any other questions or concerns about this research.

RIGHTS OF RESEARCH PARTICIPANT - IRB CONTACT INFORMATION

If you have questions, concerns or complaints about your rights as a research participant or research in general please contact Dr. Judy Ho, Chairperson of the Graduate & Professional Schools Institutional Review Board at Pepperdine University 6100 Center Drive Suite 500 Los Angeles, CA 90045, 310-568-5753 or gpsirb@pepperdine.edu.

SIGNATURE OF RESEARCH PARTICIPANT
--

I have read the information provided above. I have been given a chance to ask questions. My questions have been answered to my satisfaction and I agree to participate in this study. I have the opportunity to review the transcripts from my interview and make any changes. Additionally, I have been given a copy of this form.

AUDIO RECORDED

- I agree to be audio recorded*
 I do not want to be audio recorded

 Name of Participant

 Signature of Participant

 Date

SIGNATURE OF INVESTIGATOR

I have explained the research to the participants and answered all of his/her questions. In my judgment, the participants are knowingly, willingly and intelligently agreeing to participate in this study. They have the legal capacity to give informed consent to participate in this research study and all of the various components. They also have been informed participation is voluntarily and that they may discontinue their participation in the study at any time, for any reason.

Giselle Bice

 Name of Person Obtaining Consent

 Signature of Person Obtaining Consent

 Date

APPENDIX E

Research Flyer

APPENDIX F

IRB Approval Letter



Pepperdine University
 24255 Pacific Coast Highway
 Malibu, CA 90263
 TEL: 310-506-4000

NOTICE OF APPROVAL FOR HUMAN RESEARCH

Date: March 08, 2017

Protocol Investigator Name: Giselle Bice

Protocol #: 16-12-457

Project Title: POSTSECONDARY CAREER TECHNICAL EDUCATION INSTRUCTIONAL PRACTICES

School: Graduate School of Education and Psychology

Dear Giselle Bice

Thank you for submitting your application for exempt review to Pepperdine University's Institutional Review Board (IRB). We appreciate the work you have done on your proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations 45 CFR 46.101 that govern the protections of human subjects.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit an amendment to the IRB. Since your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite the best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete written explanation of the event and your written response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and documenting the adverse event can be found in the Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual at community.pepperdine.edu/irb.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval. Should you have additional questions or require clarification of the contents of this letter, please contact the IRB Office. On behalf of the IRB, I wish you success in this scholarly pursuit.

Sincerely,

Judy Ho, Ph.D., IRB Chair