

**Assessment of Professional Development Needs and Satisfaction of Technical College
Instructors at Tennessee College of Applied Technology:
A Descriptive Research Study**

**A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville**

**Sarah Alese Nadel
December 2019**

Copyright © by Sarah A. Nadel
All rights reserved.

Dedication

Mom, I would not be where I am today if not for you. Your unwavering support and love have pushed me to succeed when that seemed impossible. This would not have been possible without you by my side, cheering me towards the finish line. To my dad, Jennifer, Kenny, Laurie, Cassie, Ricky, David, and all my other family members – thank you for always believing in me, no matter what challenges I may have faced. You have remained constant in your support of all I do, and I am forever grateful to each of you. Juliann, you were the first person to push me to achieve more than I thought possible and I am forever thankful for your love and support. Karoline, thank you for always listening and pushing me to succeed and giving me so many opportunities to utilize the skills I have learned along this journey. To Valerie and Kate, I am forever grateful for our friendship over the past 20 years and your never-ending support of everything I do.

To Audrie, you are a true example of what a best friend is, and I could not have done this without you by my side to make me laugh, wipe away my tears, and to remind me to enjoy life in between the classes, projects, and stress during this amazing and challenging time in my life. To Ashley – thank you for your unwavering support and love that you have given me during this journey. You have shown me how to push forward through any obstacle and how to overcome my biggest challenges. Now and forever, you are in my heart.

And lastly, to everyone who has a dream they think is unattainable, I dedicate this to you. Never be afraid to push yourself and reach for your dreams. Nothing is impossible. In the words of Winston Churchill, which my dad and I so wonderfully quote, “Never, never, never give up.”

Acknowledgements

First and foremost, I would like to say thank you to my advisor and chair, Dr. Jennifer Ann Morrow. I am truly grateful for every opportunity you have given me since I started my studies in the ESM program. You have guided me throughout my time at the University of Tennessee in so many ways and have helped me to succeed even during the struggles and challenges I have faced. You have been a constant source of support inside and outside of the classroom. I am forever grateful for your guidance, time, and investment in me. To my committee members, Dr. Gary Skolits, Dr. Louis Rocconi, and Dr. Patrick Biddix, I want to acknowledge how grateful I am for your support and guidance throughout my time at UT. I sincerely appreciate all your feedback and willingness to help guide me through my dissertation journey. To the Tennessee Board of Regents (TBR) and each Tennessee College of Applied Technology (TCAT), I sincerely appreciate your support within my dissertation study. To the Tennessee Board of Regents (TBR) and each Tennessee College of Applied Technology (TCAT), I sincerely appreciate your support within my dissertation study.

To my ESM family, thank you all for the support you have shown. I have enjoyed learning with and from each of you, as well as, the friendships I have made along the way. I am truly grateful for the encouragement each of you have provided and I am excited to hear about each of your successes within the future. For two special members of my ESM family, Ann and Paul, I could not have done this without you both. Ann, your constant guidance and support has helped me push through and find the right words to finish the journey successfully. Paul, we have been on the road together and I am truly grateful that I have had you by my side along the way. Without you both, this would have been impossible.

Lastly, to each person who I have worked with at the University of Tennessee, I am grateful for the support and kindness you have given to me. This journey has been one of ups and downs and the support from my UT family has helped me preserve and succeed in this academic endeavor. For that, I am truly grateful.

Abstract

The primary purpose of the study was to identify factors related to instructor initial training satisfaction, strengths and weaknesses, and suggestions for improvement at each Tennessee College of Applied Technology (TCAT). The preliminary study (exploratory case study) consisted of one-on-one interviews and classroom observations with TCAT instructors at the pilot study TCAT location. The main dissertation study collected data using an online survey that was developed based off the analysis of responses during the preliminary study.

Survey participants consisted of 153 current TCAT instructors who taught at different locations within Tennessee. Likert item data was analyzed to identify level of agreement for each quantitative statement within the study survey. Qualitative data was sanitized and coded utilizing an Axial Coding method (Merriam & Tisdell, 2016) to identify codes and categories within the participant responses. Responses were analyzed for the entire sample population, based on gender, ethnicity, and the participant's teaching program dominant Holland Code to assess for differences in training strengths and weakness. The results of the quantitative and qualitative analyses identified training successes within TCAT locations such as partnering with tenured a TCAT instructor, TBR training, and administrative training. Suggestions were made by participants to further improve TCAT initial instructor training and continued instructor professional development. Topics identified included: instructor mentoring, orientation, lesson planning resources, detailed policies and procedures, administrative duties, and classroom management techniques. Data further identified suggestions for continued professional development after initial hire.

Overall findings determined that participants have a strong desire for professional development opportunities upon initial hire at TCAT, but also within their tenure at TCAT.

Meaningful suggestions of training activities were identified to strengthen TCAT instructor professional development and teaching methodologies, which, in turn, can increase student success (Bouguen, 2016; Kelly, 2019).

Table of Contents

Chapter1: Introduction and General Information	1
Introduction to the Study.....	1
Statement of the Problem	1
Purpose of the Study	3
Theoretical Background	4
Significance of the Study	4
Objective	6
Research Questions	6
Positionality.....	6
Terms and Definitions	7
Limitations	8
Delimitations	8
Overview of the Study.....	8
Summary	9
Chapter 2: Literature Review.....	10
Methods of Post-Secondary Instructor Professional Development.....	10
Mentoring.	11
Team-Based Learning.....	11
Seminars and Workshops.	12
Postsecondary Instructor Training and Professional Development	13
Instructor Characteristics and Student Success.....	15
Career and Technical Colleges.....	17
Tennessee’s Colleges of Applied Technology	19
TCAT Instructor Training	23
Gaps in the Literature.....	26
Study Purpose and Research Questions	27
Chapter 3: Research Design and Methodology	30
Strand 1 Design	30
Strand 2 Design	38
Study Participants.....	41
Data Analysis	48
Chapter 4: Presentation of Study Findings	53

Introduction	53
Overview of Data Cleaning and Analysis	54
Strand 1 Results.....	55
Strand 2 Results.....	59
Summary of Results	93
Chapter 5: Discussion and Limitations of Findings.....	96
Introduction	96
Findings.....	96
Limitations of the Study.....	105
Practical Implications and Conclusions	106
References.....	111
Appendix.....	122
Appendix A: Strand 1 Recruitment Email	123
Appendix B: Strand 1 Classroom Observation Checklist	124
Appendix C: Instructor Professional Development Needs Survey	126
Appendix D: Strand One Instructor Interview Protocol.....	132
Appendix E: Recruitment Letter from TBR to TCAT Presidents.....	135
Appendix F: Strand 1 Informed Consent - Interviews	136
Appendix G: TCAT Faculty Recruitment Emails.....	138
Appendix H: TCAT Recruitment Flyer	139
Appendix I: TCAT Informed Consent	140
Vita.....	142

List of Tables

Table 1: TCAT Locations and Number of Programs per Location	20
Table 2: TCAT Degree and Certificate Completion Options per Program	21
Table 3: Dissertation Research Questions, Data Sources, and Artifact Reviews	29
Table 4: Strand One: Analysis Plan.....	34
Table 5: Instructor Professional Development Survey Questions and Corresponding RQs	37
Table 6: TCAT Full-Time and Part-Time Instructors per Location	40
Table 7: Participation by TCAT Program	46
Table 8: Strand Two: Analysis Plan.....	51
Table 9: Strand One: Professional Development Qualitative Themes.....	56
Table 10: Strand One: Observation Classroom Behaviors	59
Table 11: RQ1: Instructor Responses: Strongly Agree – Agree	60
Table 12: RQ1: Instructor Responses: Mean Scores and Standard Deviations Based on Holland Codes	62
Table 13: RQ1: Agreement Frequencies Based on Gender of TCAT Instructor	63
Table 14: RQ1: Agreement Frequencies Based on Ethnicity of TCAT Instructor	65
Table 15: RQ1: Qualitative Responses: Initial TCAT Instructor Training Received	66
Table 16: RQ1: Qualitative Responses: Most Helpful Training Received	67
Table 17: RQ1: Qualitative Responses: Initial Training Improvement Suggestions	68
Table 18: RQ1: Qualitative Responses: Prior Training/Experience	70
Table 19: RQ1: Qualitative Responses: Suggestions for Improvement	71
Table 20: RQ1: Qualitative Responses: Additional Comments	73
Table 21: RQ2: Instructor Responses: Strongly Agree – Agree	74
Table 22: RQ2: Instructor Responses: Mean Scores and Standard Deviation Based on Holland Codes	76
Table 23: RQ2: Agreement Frequencies Based on Gender	78
Table 24: RQ2: Agreement Frequencies Based on Ethnicity	80
Table 25: RQ2: Qualitative Responses: Most Helpful Training Received	82

Table 26: RQ2: Qualitative Responses: Other Training Received at TCAT	84
Table 27: RQ2: Qualitative Responses: Training Desired Upon Initial Hire	85
Table 28: RQ2: Qualitative Responses: Additional Comments	87
Table 29: RQ3: Instructor Responses: Strongly Agree – Agree	88
Table 30: RQ3: Instructor Responses: Mean Scores and Standard Deviation Based on Holland Codes	88
Table 31: RQ3: Agreement Frequencies Based on Gender	90
Table 32: RQ3: Agreement Frequencies Based on Ethnicity	90
Table 33: RQ3: Qualitative Responses: Training Wish Received	92
Table 34: RQ3: Qualitative Responses: Additional Comments	94

List of Figures

Figure 1: Strand One Interviews: Participation by Gender.....	41
Figure 2: Strand One Observations: Participation by Gender.....	42
Figure 3: Strand One: Overall Participation: Years Teaching at TCAT.....	42
Figure 4: Strand Two: Participation by Gender.....	44
Figure 5: Strand Two: Participation by Ethnicity.....	44
Figure 6: Strand Two: Participation by Time Teaching at TCAT.....	45
Figure 7: Strand Two: Participation by Time in Industry.....	45
Figure 8: Strand Two: Participation by Holland Code.....	47

Chapter 1

Introduction and General Information

Introduction to the Study

This chapter describes the purpose of the current study, identifies the research questions and problem that were analyzed, the study's significance, and possible limitations. As higher education institutions continuously seek to increase retention, build enrollment, and increase student success, key factors continue to emerge. A key aspect that contributes to each of the factors revolves around instructor preparation. As most of the current research regarding instructor characteristics and their influences on student success and retention addresses 4-year institutions and community colleges, it is essential to clarify those of technical college instructors. Therefore, it is necessary to identify the training received and more importantly, how that training has or has not contributed to their ability to be an effective instructor in their classrooms.

Statement of the Problem

In the past several years, the Tennessee Colleges of Applied Technology (TCAT) have received much attention due to their increased enrollment, increased funding available to students, and large job placement of their students prior to graduation (Tennessee Higher Education Fact Book, 2019). Each year traditional and nontraditional students continue to enroll in various programs, or they commit to a waiting list as programs fill up rapidly. The National Center for Educational Statistics defines nontraditional students as those who are older than 24 years old, typically work full-time, primarily live off campus, and can also be based on race, gender, and ethnicity (NCES.gov, n.d.). However, Jinkins (2009) identifies students 18-23 years old as traditional and those 24 years and older as nontraditional students with no other attributes

except for age as a factor for student classification. For the purpose of the current study, traditional students are defined as those who are 18-23 years old, and nontraditional students are those who are older than 24 years of age.

Upon entering a program, students are enrolled in courses with instructors who have a specific degree of knowledge within their field. For example, a job posting at TCAT-Knoxville (TCAT-K) for a cosmetology instructor requires that the applicant has graduated from an accredited cosmetology program, has a valid Tennessee cosmetology license, has a valid cosmetology instructor's license, and has at least 3 years' experience as a cosmetologist (TcatKnoxville.edu, 2018). A job posting for a Heating, Ventilation, Air Conditioning, and Refrigeration (HVAC) instructor's minimum qualifications include 3 years' work "in all phases of industrial, residential, and commercial HVAC/R systems to include installation and service" and an EPA Universal Certification (TCATKnoxville.edu, 2018). Programs such as dental assisting, medical assisting, nursing aide, practical nursing, and surgical technology include instructors who hold nursing degrees or dental degrees and have a minimum of 3 years of on-the-job experience (Vatter, 2018). However, there is no prior teaching experience requirement or instructor training experience required to be employed as an instructor at TCAT. As student academic success and retention in higher education are of continued interest, it is imperative to identify whether instructors receive the professional development resources and trainings needed so they are able to teach the skills necessary for their students to be successful (Mangum, 2017).

The knowledge and skillsets that each student gains in school is due to what they learn from their instructors. Thus, instructor professional development is essential within all institutions as increased professional development leads to instructor praise and student satisfaction; however, there continues to be a disconnect between practice and instructor

philosophy (Grau, Calcagni, Preiss, & Ortiz, 2017; Simonsen et al., 2017). Additionally, Kelly and Cherkowski (2015) suggested that instructor professional development promotes and increases collegial relationships within institutions. For example, administration at TCAT-K has noted that instructors communicate with other TCAT instructors in the same discipline when they share information about the skills needed to be more successful within their classrooms (Vatter, 2018).

TCAT-K instructors are all professionals within their field, and prior to joining TCAT-K they worked directly in their field (i.e., cosmetology, welding, etc.) (Vatter, 2018). However, many have not had formal professional development instructor training regarding how to teach, ensure their students are successful, or develop daily/weekly/monthly lesson plans (Vatter, 2018). Therefore, upon starting their career at TCAT-K, the instructors receive a brief handout on the history of the institution; however, there is little information on how to instruct their students successfully. As such, the professional development of these instructors is essential. This, in turn, results in students who are academically well-prepared for their externships, to complete their program and graduate, and to enter the workforce.

Purpose of the Study

The purpose of the current study was to assess the level of Tennessee College of Instructor (TCAT) instructor needs and satisfaction with their current methods of instructor training. This research further examined the strengths and weaknesses of TCAT faculty training through a descriptive study that utilized survey methodology with both qualitative and quantitative questions/statements.

Theoretical Background

Action learning is “a form of experiential learning that focuses on problem solving” (Davis et al., 2012, p. 103). Miller (2003) defined action learning as a process employed in organizations to help individuals develop further through constant education in the workplace. Furthermore, action learning “constructs a ‘learning space’ within which assumptions and power relations can be explored” (Vince, 2010, p. 65).

Utilizing the theoretical framework of action learning is suitable within the education organization setting of TCAT. Action learning “is a continuous process of learning and reflection that happens with the support of a group or ‘set’ of colleagues, working on real issues, with the intention of getting things done” (Brockbank & McGill, 2003, p. 11). Thus, within an educational setting where administration and instructors seek to continue their professional development, using an action learning framework allowed TCAT instructors to reflect on their life experiences as a resource and to improve their skills further with administrative and colleague support (Brockbank & McGill, 2003).

Significance of the Study

Community and technical college enrollment and graduation rates throughout the country have continued to decline over the past several years (Juszkiewicz, 2017). However, within the state of Tennessee, technical and community college enrollment has increased drastically over the past several years (Smith, 2015; Tennessee Higher Education Commission & Student Assistance Corporation, 2017). Governor Haslam challenged the entire state with the Drive to 55 program to decrease unemployment and increase college enrollment and graduation rates. In order to aid in this endeavor, the TN Reconnect and TN Promise scholarships were created to

give financial assistance to high school graduates and adults who have yet to complete a college degree (driveto55.org, 2018).

The TN Reconnect scholarship allows adults to enroll in a community or technical college within Tennessee and covers their tuition. The TN Promise provides tuition coverage for 2 years of community or technical college courses to Tennessee high school graduates. As technical college enrollment continues to increase, these institutions are hiring more instructors to ensure they meet the needs of their growing classrooms. However, while most technical instructors have advanced experience within their specific career fields, they have little training in teaching best practices and pedagogies in their classrooms (Bureau of Labor Statistics, 2015).

TCAT is one such institution where this issue has been identified. TCAT institutions focus on a hands-on approach and students learn instruction takes place as though students are within the workforce. While their enrollment continues to increase, their instructors, both new and seasoned, have had very little training in understanding how to educate and teach their students. To examine the professional development needs of current TCAT instructors, a descriptive research study was conducted. The data gathered will inform the Tennessee Board of Regents (TBR) and TCAT administration regarding what changes in instructor training and professional development are needed to increase the success of current and future instructors.

To identify which training best practices should be established or modified, the current study employed an online survey that was developed based on an exploratory case study (Strand 1) that examined instructor training and professional development needs within one specific TCAT location. One-on-one interviews and classroom observations were held in Strand 1 as data collection methods, the results of which were coded using axial coding methods (Strauss & Corbin, 2008). Strand 2 used an online survey with both qualitative and quantitative

questions/statements based on the codes and relationships identified in Strand 1 to further examine instructor professional development needs in all 27 TCAT locations. By completing each of these aspects, the researcher was able to identify the strengths and weaknesses of the current training materials used within all TCAT locations. Additionally, the study identified the satisfaction levels with current TCAT instructor training, from which suggestions for change regarding TCAT instructor professional development emerged. Furthermore, the findings and implications of this study can be generalized to any technical college institution for instructor training guidance and suggestions to increase instructor professional development.

Objective

The hypothesis was tested using a descriptive research study to answer the following research questions.

Research Questions

1. What are instructor perceptions of instructor training and professional development provided by TCAT and TBR?
 - a. What do instructors see as weaknesses in the training and professional development provided?
 - b. What are the training and professional development strengths according to TCAT instructors?
2. What professional development and/or resources are needed by TCAT instructors?
3. What type of teaching pedagogies/activities are most used by TCAT instructors?

Positionality

Over the past 4 years I have worked with TCAT-Knoxville (TCAT-K) on several projects, and I have been able to see the changes they have made for their students to help make

them more successful within their courses and after graduation. I have been privy to statistics regarding student growth, student success, and job rates that show that TCAT-K continues to become stronger each year within the technical college field.

As I have worked with various administration, faculty, and students at TCAT-K, I believe I have been able to establish a trusted relationship that will allow me to collect honest and candid responses from the instructors participating in the one-on-one interviews. Additionally, as I will be conducting the observations on my own and without any members of administration, I believe the instructors will be unaffected by my presence and instruct their students identical to how they would if I was not observing their classroom. Based on Strand 1 and the work I have done for TCAT-K, I am hopeful that the Tennessee Board of Regents (TBR) will support my endeavor to further assess instructor satisfaction within each TCAT location.

Terms and Definitions

The following are terms and definitions that should be understood within the current study:

- 1) Action Learning – defined as “a continuous process of learning and reflection that happens with the support of a group or ‘set’ of colleagues, working real issues, with the intention of getting things done” (Brockbank & McGill, 2003, p. 11).
- 2) Professional Development – defined as “teachers learning, learning how to learn, and transforming their knowledge into practice for the benefit of their students’ growth” (Avalos, 2011, p. 10).
- 3) Team-Based Learning – instructor training that utilizes five elements (leadership, mutual performance monitoring, backup behavior, adaptability, and team orientation) to further develop, while working with and helping work to train others (Benishek et al., 2016).

Limitations

One limitation within the study is that the researcher's interpretation of the data may be biased due to the previous working relationships with various members of TCAT-K administration, staff, and faculty. While I have worked with both the students and faculty at TCAT-K, I must ensure I remain neutral and do not let my own opinions regarding the responses of TCAT instructors bias my data interpretation within the survey results. I will ensure I follow all directions and guidelines within the literature to properly analyze all data, both qualitative and quantitative. Lastly, when coding all qualitative data, I will avoid any bias by following the axial coding methods of Strauss and Corbin (2008).

Delimitations

While several assumptions and limitations have been mentioned, there are delimitations within the study that should be addressed. One main delimitation is that Strand 1 took place only at TCAT-K instead of at each TCAT location. Therefore, the results may not be transferable (Lincoln & Guba, 1985; Merriam & Tisdell, 2016). However, the Strand 2 accounted for and addressed this delimitation by allowing all instructors at each TCAT location to participate in the Strand 2 and address each research question.

Overview of the Study

The study is organized into five chapters: Introduction and General Information; Literature Review; Research Design and Methodology; Results; and Discussion, Conclusions, and Recommendations. The current chapter, Introduction and General Information, includes an overview of the study with the statement of the problem, research questions, and an overview of the methodology. Chapter Two explains the significance of the study and gives background information on the problem, explanations of the methodology, and a theoretical framework

thorough a comprehensive literature review. Chapter Three identifies the methods utilized for the study and the study procedures. Chapter Four explains the results and findings of the study. Finally, Chapter Five discusses the implications of the research findings, the conclusions of the research questions, and the recommendations for TCAT to increase instructor training satisfaction.

Summary

A descriptive study was conducted to evaluate instructor training at TCAT. The assessment identified instructor training strengths and weaknesses, and the findings and suggestions for improvement were provided to TCAT administration and TBR. The primary dissertation study (Strand 2) was a continuation of a previous descriptive case study (Strand 1) that utilized one-on-one interviews and observations at TCAT-K. The one-on-one interviews with various faculty members were conducted to gain instructor insights into their training, successes with the training they received, and the aspects of the training that should/could be changed to make them more successful instructors. Additionally, observations were conducted to identify instructor practices, and notes were made to identify what could be improved, what practices are successful, and any changes the participants wanted needed/wanted to make. This assessment took place at TCAT-K over the course of 4 months with administrative and instructor support.

The primary dissertation study (Strand 2) consisted of an online survey available to each TCAT instructor. The survey was developed based on the findings in Strand 1. The assessment took place over the course of 2 months with the support of TBR, each TCAT location, and all TCAT administration.

Chapter 2

Literature Review

The focus of the current study was on satisfaction with instructor training and professional development (PD) and the needs of instructors employed in a technical college. The study was conducted at all Tennessee College of Applied Technology locations. The current chapter includes the following sections: Importance of Post-Secondary Instructor Training and Professional Development, Methods of Post-Secondary Instructor Training, the Link Between Instructor Characteristics and Student Success, Career and Technical Colleges, Tennessee's Colleges of Applied Technology (TCATs), and Technical Instructor Training. Various searches were conducted using the University of Tennessee Hodges Library and the electronic journal collection to locate relevant literature. Several types of literature were obtained, including peer-reviewed articles, online conference presentations, journal chapters, and books. They were reviewed to gain general and specific information regarding each aspect of the study. Also, various databases, such as ERIC, PsycINFO, and EBSCO Publishing, were utilized to collect literature regarding each of the aforementioned topics. This chapter introduces key literature in career and technical education training and professional development, methods and effects of post-secondary instructor training, career and technical college background and information, Tennessee's Colleges of Applied Technology (TCATs), technical instructor training, gaps in the literature, and the purpose of the study and research questions.

Methods of Post-Secondary Instructor Professional Development

Within education, instructors must continue to diversify their teaching methods through various professional development approaches to form connections with students and colleagues at their institutions (Richmond et al., 2017). To further enhance these relationships, methods of

postsecondary instructor professional development continue to be examined for best practices each year (Benishek et al., 2016; Goodyear, 2017; Grau et al., 2017). Examples of instructor professional development activities include mentoring; team-based systems; and seminars and workshops. While there are several other methods that can be employed, these seem to be the most widespread forms of instructor training within postsecondary education.

Mentoring. Mentoring has become one major aspect of training that has shown to increase an instructor's teaching skills within the classroom. Mentoring is part of higher education training, as well as in K-12 settings, with evidence that faculty who are mentored have higher levels of teaching and learning effectiveness within their classrooms, as well as increased reflection and increased engagement with their students (Ast & Field, 2005; Smith & Nadelson, 2016). Mentoring has also been shown to increase career progress and overall job performance for the new instructor being mentored (Kuter, 2016; Tareef, 2005). Richmond et al. (2017) identified that in mentoring practices, the mentees valued that the professional development practice allowed for "Multiple Types of Collaboration," "Dynamic and Participatory Activities," and "Learning Specific Mentoring Practices" (p. 18).

Mentoring practices vary from providing social support to offering scholarly training to enhance grant-writing skills (Lechuga, 2014). However, the success of a specific mentoring practice can vary based on the specific field within which the instructor is teaching (Lechuga, 2014). Thus, it is essential to understand which mentoring processes are best suited for various individuals to ensure they are successful classroom instructors.

Team-Based Learning. Team-based learning (TBL) is another training technique that is utilized within education to help better prepare novice instructors. TBL training has been identified as having five main core components: leadership, mutual performance monitoring,

backup behavior, adaptability, and team orientation (Benishek et al., 2016). Benishek et al. (2016) explain that “These five elements are synchronized through three mechanisms: shared mental models, closed-loop communication, and mutual trust” (p. 113). Each member of the team is therefore responsible for not only their own training, but also the training of the other members of the team. One must be cognizant of their abilities and lack of expertise in various areas to ensure they are progressing and growing, while also being able to lead others.

In numerous studies, TBL has been identified as having a positive effect not only on instructor professional development but also on student learning (Dearnley, Rhodes, Roberts, Williams, & Prenton, 2018; Obad et al., 2016). Furthermore, TBL has revealed increased retention of information versus traditional lectures for both students and instructors (Travis, Huson, Henricks-Lepp, Street, & Weidenbenner, 2016), thus supporting the necessity of TBL in instructor training and professional development.

Seminars and Workshops. During any instructor’s tenure, they have the opportunity to attend seminars and workshops to further their own training and knowledge (Neidorf, 2007).

These seminars and workshops can take place online, be led by administration at their institutions, or at local, regional, or national conferences, based on their training needs.

The purpose of these seminars and workshops is for instructors to increase or gain new knowledge that will help them be more successful educators. Topics for these seminars or workshops vary from general instruction practices to techniques for their specific course subjects that will help them reach each student in their courses.

Ntoumanis, Thøgersen-Ntoumani, Quested, and Hancox (2017) suggest that instructors who participated in a training workshop found that they were more motivated and had an increased sense of well-being. Iserbyt, Theys, Ward, and Charlier (2017) contend that instructors

who participated in a 50-minute workshop not only demonstrated improved teaching skills, but also their students' academic performance increased as well. Meyer and Murrell (2014) conducted a study to identify what types of training were used most within higher education institutions. They found that workshops and seminars occurred in all of the schools (45) that participated in the study (Meyer & Murrell, 2014). Additionally, upon further examination, Meyer and Murrell (2014) determined that workshops were used for teacher training for instructors teaching all levels of degree programs (doctoral, master's, bachelor's, associate's, etc.).

Research continues to demonstrate that there are a multitude of ways for instructors to increase course topic retention and foster cognitive development in their students. Mentoring, team-based systems, and seminars and workshops are three main examples of how instructors learn these techniques when they are beginning their academic careers or how to enhance their teaching skills over time. Furthermore, research has shown that these types of instructor training techniques help create a stronger community within the institution (Meyer & Murrell, 2014). Evidence indicates that teacher training is a necessity for instructors at any level, but to increase student development within this specific case study, attention must be paid to training and professional development of postsecondary instructors.

Postsecondary Instructor Training and Professional Development

Across the globe, higher education institutions continue to recruit new instructors from various disciplines, as student enrollment rates continue to grow (Bureau of Labor Statistics, 2015). According to "Postsecondary Teachers" (n.d.), postsecondary instructors' responsibilities include developing their course syllabi, creating lesson plans, publishing within their content area and field, and ensuring their courses meet all standards set forth by their department and

college. Their responsibilities continue as they carry over to ensuring the success of their students through working directly with them to assess their grades and skills and to enhance each student's content knowledge ("Postsecondary Teachers," n.d.). Additionally, instructors in higher education should be willing and able to advise their students on courses to take and help students identify their collegiate goals ("Postsecondary Teachers," n.d.).

Instructors have a clear role in their own training and professional development (Botha, 2012). They can achieve these goals by fulfilling their responsibilities as instructors and through demonstrating effective teaching practices. This concept has become widely recognized across the nation, where different strategies have been used to train faculty on how to increase student performance (Beverborg, Slegers, & van Veen, 2015), which will in turn lead to increased retention and success of their students. Therefore, instructors must be not only be experts in their specific field so they can transfer their knowledge to their students, but they must be trained in best classroom teaching practices so that knowledge transfer to students is possible.

To continue their growth and their students' growth, instructors must focus on their own training and professional development (Akalın & Sucuoglu, 2015). The University of South Carolina's University 101 Programs webpage (n.d.) gives a model for postsecondary professional development that includes teaching experience workshops; syllabus preparation and team-building workshops; a conference on building connections; summer workshops; faculty meetings, brown bag lunches, and various workshops; the faculty resource manual; SharePoint intranet; weekly instructor emails; and the campus resource guide. The University of California San Diego (2017) allows instructors to take courses, earn program certificates, and join professional organizations to increase their professional development. They focus on the following topics: creative thinking power, the practice of listening, effective business writing,

effective public speaking and presentations, and training adults at work (principles, designing workplace training, diversity education, training one-on-one, Microsoft Office technology, coaching students, and applying instructional skills).

While training and professional development programs are being implemented continuously within various institutions, to increase teacher instructor ability, “the need to improve university teachers’ teaching skills and pedagogical thinking is now acknowledged to be essential” (Postareff, Lindbloom-Ylänne, & Nevgi, 2008, p. 29). Goodyear (2016) suggested that students’ interactions and social and physical learning was influenced by an instructor’s positive interdependence, group processing, and individual accountability within their own professional development. More specifically, Goodyear (2016) posited that instructor training and professional development are correlated with student learning advancement. Trussell, Lewis, and Raynor (2016) found that instructor practices not only affected student learning, but also strongly impacted student behavior within the classroom, which decreased student distraction and increased student interaction. Thus, instructor training and professional development has a clear impact on student learning, behavior, and advancement outcomes. The purpose of the current study was to assess the training and professional development and satisfaction levels of TCAT-K instructors.

Instructor Characteristics and Student Success

Every instructor demonstrates different teaching techniques to increase their students’ success. They each have characteristics that make them unique; however, there are specific traits they must possess that will increase their students’ success. Phillips, Baltzer, Filoon, and Whitley (2017) found that students were more successful and receptive when instructors treated them with respect, had real-life experiences within their field of study, were fair, and communicated

well. Phillips et al. (2017) further found that students struggled when their instructors were disrespectful, arrogant, and condescending.

Armstrong and Hope (2016) acknowledged that student success was based on the instructor's support, challenge within the classroom, and communication. More specifically, Armstrong and Hope (2016) suggested that for students, no matter the institution, to be successful they need to know that their instructors are relaying thought-provoking and stimulating concepts in the classroom. Lammers, Gillaspay, and Hancock (2017) reinforced Armstrong and Hope's (2016) findings regarding student-instructor communication. They determined that students who have constant communication throughout a semester/term with their instructors have grades that surpass those of students with noncommunicative instructors (Lammers et al., 2017). Students were also found to have more academic drive and overcome academic barriers when they know their instructors have a vested interest in them and they don't feel like they are just a number in a classroom or college (Armstrong & Hope, 2016). Lastly, Armstrong and Hope (2016) found that students' drive to succeed academically also increases when they can communicate openly and honestly with their instructors.

In addition to communication, an instructor's knowledge of their specific field of expertise is another important characteristic that promotes student success (Phillips, Baltzer, Filoon, & Whitley, 2017). Trammell and Aldrich (2016) further supported this characteristic as they found that students of instructors who are knowledgeable about course content have increased levels of success. Trammell and Aldrich (2016) also recognized that instructor approachability and strong teaching skills were key factors in student success. These factors apply to both nontraditional and traditional students. As such, instructors within any institution

must ensure their own characteristics and traits are ones that promote student success, and continued professional development is necessary to guarantee that their students' needs are met.

Career and Technical Colleges

Career and technical colleges (CTEs), which are also known as trade schools or vocational colleges, are “institutions designed to provide technical skills or vocational education required to perform tasks of a particular job” (Moses, 2016, p. 1). With the passing of the Vocational Education Act of 1963, CTEs began to grow rapidly with the enrollment of students of any age or socioeconomic status (Imperatore & Hyslop, 2017). Further changes were made with the Vocational Education Amendments of 1968, the Vocational Education Amendments of 1976, Title IX, the Career Education Incentive Act of 1977, and the Carl D. Perkins Vocational Education Act of 1984 (Imperatore & Hyslop, 2017). Each of these acts or amendments led to the CTEs that were the basis of this study, where anyone from any background or status can apply to pursue their CTE degree in a specialized field (i.e., welding, cosmetology). But it wasn't until the 1990s when complete inclusion for all persons and CTEs' connection with other educational institutions was put into place (Imperatore & Hyslop, 2017).

Over the past several decades, CTE enrollment has increased tremendously. CTEs “are a more streamlined approach to education, with curricula focusing on developing a particular skillset and knowledge base for a career rather than receiving a general education” (Hamm, 2016, p. 1). These institutions offer their students the ability to save approximately \$114,000 on their education versus pursuing a costly 4-year bachelor's degree (Hamm, 2016). Hamm (2016) also acknowledges that CTEs offer increased job security for their graduates as the degrees offered are those that cannot necessarily be outsourced to other countries. They also are in high demand within the United States, increasing the likelihood of job placement upon graduation.

Wainwright (2004) assessed the training offered at various Louisiana technical colleges, and he found that training was redesigned so that students gained skillsets that increased their employability within their fields. Schmidtke (2009) identified various instructional techniques that increase student success at technical colleges, including showing preparedness, reviewing daily learning outcomes with students, and explaining assorted topics in diverse ways to reach each learner. Duffy (1997) outlined the changes over the past 40 years in South Carolina's technical colleges and the challenges they faced.

Enrollment demographics include those of all races and ethnicities and of various ages. There is no discrimination of enrollees in a career or technical college. The education offered at these institutions gives students a hands-on approach to learning regarding a specific trade or profession, such as cosmetology, welding, and certified nursing assistant. CTEs are growing not only in the United States, but around the globe as well. As such, research regarding technical colleges has become more widespread. Po, Jianru, and Yinan (2015) found that students in China who graduated with a technical college degree faced the same successes and barriers when applying for jobs as those did upon graduation from a 4-year institution.

While research continues to be conducted within these institutions, one major issue found in the literature is that any search for information regarding CTEs yields information that addresses community colleges, but the two are very different entities. Community colleges offer 2-year degrees to students, but also serve as a pathway to a 4-year degree. TCAT offers students the ability to learn a trade, and upon completion, they are ready to enter the workforce. Students can begin their program with a hands-on learning approach where they are able to focus directly on skills and techniques that are utilized within their future career field. The needs of these

different student populations can be similar but are also vastly different. Thus, the instructor needs and training are different as well. The following sections address these differences.

Tennessee's Colleges of Applied Technology

The Tennessee Board of Regents (TBR) oversees 40 different institutions within the state of Tennessee. Of those, there are 27 Tennessee Colleges of Applied Technology (TCAT). (See Table 1 for a list of TCAT institutions and the number of programs they offer). Each TCAT offers full-time and part-time technical programs, and some locations offer online learning as well. Students can earn a certificate or diploma based on their program enrollment choice. Programs within each location vary from 6 to 28 programs offered (Table 2).

As identified in Table 2, each TCAT program's CIP code is linked to a specific dominant Holland Code (Holland, 1985). Holland codes consist of six different categories developed by John Holland that are utilized to "characterize people according to their resemblance to six personality types and to characterize environments according to six ideal environments" (Holland, 1996, pg. 397).

In 2015, to increase enrollment, TBR (n.d.) began offering their students the TN Reconnect and TN Promise programs, allowing more students to have access to free financial assistance while enrolled at TCAT-K. According to TNReconnect.gov (n.d.), Governor Haslam developed this "initiative to help more of our state's adults enter higher education to gain new skills, advance in the workplace, and fulfill lifelong dreams of completing a degree or credential." TCAT students who enroll to finish a degree, are going to college for the first time, or are veterans and service members can take advantage of the TN Reconnect while attending TCAT-K. The TN Promise program, which is for newly graduated high school students, is "both a scholarship and mentoring program focused on increasing the number of students that attend

Table 1.*TCAT Locations and Number of Programs per Location*

TCAT Location	Number of Programs Offered
Athens	9
Chattanooga	28
Covington	8
Crossville	17
Crump	13
Dickson	13
Elizabethton	15
Harriman	11
Hartsville	14
Hohenwald	18
Jacksboro	10
Jackson	18
Knoxville	19
Livingston	18
McKenzie	8
McMinnville	12
Memphis	24
Morristown	19
Murfreesboro	16
Nashville	21
Newbern	14
Oneida/ Huntsville	13
Paris	13
Pulaski	13
Ripley	7
Shelbyville	14

Table 2.*TCAT Degree and Certificate Completion Options per Program*

Program	THEC Taxonomy (CIP Code)	Dominant Holland Code
Administrative Office Technology	52.0402	Conventional
Advanced Manufacturing Production Technology	15.0613	Investigative
Advanced Aesthetics	12.0499	Artistic
Aesthetics Technology	12.0414	Enterprising
Assistant Animal Laboratory Technology	51.0808	Realistic
Automation Mechatronics	47.0303	Realistic
Automotive Technology	47.0604	Realistic
Aviation Maintenance Technology	47.0608	Realistic
Avionics Maintenance Technology	47.0609	Realistic
Barbering	12.0402	Realistic
Building Construction Technology	46.0415	Realistic
Carpenters and Millwrights App.	46.0201	Enterprising
Central Sterile Processing	51.1012	Realistic
Certified Nursing Assistant	51.3902	Social
CNC Machining Technology	48.0501	Realistic
Collision Repair Technology	47.0603	Realistic
Computer Aided Design Technology	15.1301	Realistic
Computer Information Systems	11.1003	Enterprising
Computer Information Technology	11.1006	Realistic
Computer Electronics/Computer Operating Systems and Network Technology	11.0901	Realistic
Computer Numerical Control	48.0510	Conventional
Computer Support Technician	52.0407	Conventional
Cosmetology	12.0401	Artistic
Cosmetology Instructor Training	12.0413	Artistic
Culinary Arts	12.0503	Enterprising
Customer Service Representative	52.0411	Enterprising
Dental Assisting	51.0601	Conventional
Dental Laboratory Technology	51.0603	Realistic
Diesel Powered Equipment Technology	47.0605	Realistic
Dietary Manager	51.3104	Social
Digital Graphic Design Technology	50.0402	Artistic
Digital Processing Systems and Networking	11.1006	Realistic
Early Childhood Education	19.0709	Social
Electrical and Plumbing Construction Technology	46.0415	Realistic
Electrician Apprenticeship	46.0302	Realistic
Electro-Mechanical Technology	47.0302	Realistic
Electronic Systems	47.0105	Realistic

Table 2. Continued. .*TCAT Degree and Certificate Completion Options per Program*

Program	THEC Taxonomy (CIP Code)	Dominant Holland Code
Electronics Technology	47.0101	Realistic
Emergency Medical Technology	51.0904	Social
Global Logistic and Supply Chain Technology	52.0203	Enterprising
Health Information Management Technology	51.0707	Conventional
Health Science Education	51.9999	Social
HVAC/R Technology	47.0201	Realistic
Hybrid Electrical Vehicle Technology	47.0614	Realistic
Industrial Electricity	46.0302	Realistic
Industrial Electronics	47.0101	Realistic
Industrial Maintenance/Mechatronics Technology	47.0303	Realistic
Information Technology	11.1003	Realistic
Injection Molding/Robotics	15.0406	Realistic
Ironworkers Apprenticeship	48.0509	Realistic
Landscape and Turf Management	01.0601	Enterprising
Machine Tool Technology	48.0501	Realistic
Major Appliance Repair	47.0106	Realistic
Manicuring	12.0410	Realistic
Manufacturing Technology Program	15.0613	Investigative
Massage Therapy	51.3501	Social
Mechanical Maintenance, Electrical, and Instrumentation/ Mechatronics	47.0303	Realistic
Medical Assisting/Patient Care Technology	51.0801	Social
Millwright Skills	47.0303	Realistic
Motorcycle and Marine Service Technology	47.0611	Realistic
Nail Technician	12.0410	Realistic
Nursing Aide	51.3902	Social
Outdoor Power Equipment	47.0606	Realistic
Pharmacy Technology	51.0805	Conventional
Phlebotomy Technology	51.1009	Conventional
Pipefitting & Plumbing Technology	46.0502	Realistic
Power Line Construction & Maintenance Technology	46.0301	Realistic
Power Sports Technology	47.0611	Realistic
Practical Nursing	51.3901	Social
Residential Building Maintenance	46.0401	Realistic
Residential, Commercial, Industrial Electricity	46.999	Realistic
Retail, Hospitality, Tourism Technology	52.0904	Enterprising

Table 2. Continued.*TCAT Degree and Certificate Completion Options per Program*

Program	THEC Taxonomy (CIP Code)	Dominant Holland Code
Road Building Equipment Service Technician	47.9999	Realistic
Sheet Metal Workers	48.0506	Realistic
Surgical Technology	51.0909	Realistic
Technology Foundations	32.0101	Realistic
Tool and Die Maintenance Technician	48.0507	Realistic
Transportation, Distribution, Warehousing, and Logistics	52.0203	Enterprising
Truck Driving	49.0205	Realistic
Welding	48.0508	Realistic

*Note: Holland codes were identified through O*Net using each programs CIP code.

**Note: Holland code totals: Artistic (n=4); Conventional (n=7); Enterprising (n=9); Investigative (n=2); Realistic (n=50); Social (n=9).

college in our state. It provides students a last-dollar scholarship, meaning the scholarship will cover the cost of tuition and mandatory fees not covered by the Pell grant, the HOPE scholarship, or the Tennessee Student Assistance Award” (TNPromise, n.d.). According to tn.gov (n.d.), within the second year of the TN Promise program, retention rates at TCATs increased 16%, and overall first-time freshmen (FTF) enrollment increased by 32% in TCATs alone.

TCAT Instructor Training

Technical college instructors are vastly different from those in 2- or 4-year institutions in that they typically have worked for several years within the field of the course(s) they teach. They have been trained to work in industry. As such, when they enter a teaching career within a technical institution, it is imperative that they receive adequate training to ensure they are not only skilled within their field, but also able to relay key concepts and lessons to their students. Benishek et al. (2016) acknowledged that students need hands-on experiences provided by their instructors, but also instructors should be willing to adapt their teaching methods to reflect changes in trade careers. Benishek et al. (2016) suggested further that the establishment of

learning communities for instructors and students as well as professional development should continue throughout the school year.

Upon initial hiring, new instructors at TCAT receive two packets of information that help them better understand their role as a TCAT instructor. The first packet they receive is the Instructor and Staff Handbook.¹ The handbook begins by introducing the instructor to each TCAT location outside of the main location where they will teach. This is followed by an introduction from the TCAT director and an introduction section that explains the purpose of the handbook, TCAT's mission, and its purpose and objectives. The mission statement found in the TCAT-K Instructor and Staff Handbook (2017) states that TCAT is to “serve as the premier suppliers of workforce development throughout the State of Tennessee” (p. 3). This is done by:

- Providing competency-based training through superior quality, traditional and distance learning instruction methods that qualify completers for employment and job advancement;
- Contributing to the economic and community development of the communities served by training and retraining employed workers;
- Ensuring that programs and services are economical and accessible to all residents of Tennessee;
- Building relationships of trust with community, business, and industry leaders to supply highly skilled workers in areas of need.

The information that follows within the instructor and staff handbook¹ includes:

- Governance and Accreditation
- Tennessee Board of Regents Policies

¹ The TCAT-K Employee Handbook is 52 pages long and therefore not included in the appendices.

- TCAT-K Faculty and Staff Directory and Organizational Chart
- Programs of Study
- Employee Benefits including time off, leave, educational assistance
- Program Licensure, Class Schedule, and Academic Calendar
- Tuition and Fees, Admission guidelines and requirements, and student application process, registration, and student rights
- Graduation, transfer students, program changes, exit interview, student orientation, campus policies, attendance policy, and withdrawal policy
- Advisory Committee Information

The handbook then proceeds to discuss methods related directly to different types of teaching instruction. It outlines steps to create lesson plans, lecture methods, class discussion methods, course demonstration methods, and how to answer student questions. The handbook then reviews several types of student evaluation methods: written tests, oral tests, and manipulative performance tests. Lastly, the handbook discusses instructor liability information. The final part of the handbook includes examples of lesson plans and other TCAT-K information. The second handout new instructors at TCAT-K receive is the annual operating calendar with important dates instructors need to know.

While the handouts are useful and help instructors understand various concepts, to motivate their students and prepare them to enter the workforce, additional training is necessary, along with annual follow up and feedback on their strengths and weaknesses as instructors. Currently, TCAT-K's assistant directors observe various instructors during their courses to give them feedback on their teaching methods, but more in-depth evaluation and feedback is needed. Such is the case at TCAT. However, within the literature there continues to be a lack of findings

that have identified best practices in teacher training and teacher training satisfaction within this specific educational setting. It is vital that technical college instructor training be assessed further to identify the strengths, weaknesses, and practices that are needed to increase instructor capability of educating their students so that they are successful in school and upon graduation.

Gaps in the Literature

Instructor training has become increasingly vital over the last several decades within all facets of education, especially as it directly affects student success. Beverborg, Slegers, and Veen (2015) stated that “During the last decade, governments, local politicians, and school managers across the globe have been involved in efforts at improving educational systems in support of better student performance” (p. 22). Schademan and Thompson (2016) found that students are more likely to succeed within the classroom when they have supportive instructors who have a vested interest in their academic and social success. Schademan and Thompson (2016) also discovered that students of faculty who are not willing to change their own practices and adapt to their students’ needs are more likely to perform at a lower level in their classes. Nguyen’s (2015) case study found that students are more successful in their courses when their instructors understand their needs and “make appropriate advising decisions in regard to individual circumstances” (p. 705). Like students, Lechuga (2014) acknowledged that many faculties need supportive environments with elevated levels of autonomy and high levels of socialization to thrive.

While there has been much research surrounding student success and how it relates to instructor behaviors, there continues to be a lack of research regarding instructor training, specifically in a technical college institution. As demonstrated, students need instructors who are aware of their needs, are empathetic, and are supportive of their students inside and outside of

the classroom. Because technical college instructors have had no prior training on how to instruct students, they may not be aware of best practices in teaching or other aspects of teaching that are crucial to student success. The current study investigated instructor training strengths and weaknesses at TCAT. By identifying various aspects of TCAT instructor training that are successful and those that need to be changed or adapted for increased teaching success, modifications may be made to the current TCAT instructor handbook and new methods of instructor training may be utilized.

Study Purpose and Research Questions

The Tennessee Colleges of Applied Technology (TCAT) throughout the state of Tennessee offer students a variety of full-time, part-time, and online technical programs. The instructors at each of the 27 TCAT locations have specific skillsets they have learned while working in their fields (e.g., cosmetology, welding, and HVAC). This dissertation study consisted of two separate, but related, studies. As part of the first assessment (Strand 1), TCAT-K instructors identified the strengths and needs that made them more successful in their classrooms. They were asked to participate through one-on-one interviews and/or classroom observations to answer the aforementioned research questions. Upon IRB approval of all materials, a recruitment email (Appendix A) was sent out to all TCAT-K instructors on three separate occasions. The email included the purpose of the study, benefits to the participant, and the researcher's contact information. A hard copy of the email was placed in each TCAT-K instructor's mailbox to increase recruitment efforts. Each one-on-one interview lasted no more than 60 minutes; was recorded after consent from each participant was received; and data were collected, sanitized, and analyzed, and themes and codes were then identified and reported. For the observations, participants allowed the researcher to attend at least one class session, which

lasted between 1 to 2 hours. The researcher utilized the Classroom Observation Checklist (Appendix B) to record data which were then analyzed, and themes and codes were identified and reported.

Upon data analysis completion of Strand 1, the current study (Strand 2) was conducted to further assess instructor professional development needs. This study used a newly developed survey instrument (Appendix C) with both qualitative and quantitative statements/questions that was administered to all instructors at TCAT locations who agreed to participate. The survey was developed based on the feedback from Strand 1 to ensure appropriate questions and statements were included based on the population of interest. Possible participants were recruited through a series of three emails, pending all IRB and institutional approvals. The survey was open for 6 weeks, and qualitative data were analyzed during and after the data collection phase, whereas quantitative data were analyzed after the data collection phases had concluded. All data were cleaned and sanitized prior to analysis. The data were aggregated and analyzed with all findings reported to TBR and each TCAT location that requested a finalized report of the current study. The current study sought to assess the training needs and training satisfaction of technical college instructors by conducting a descriptive research study at the TCAT. Three specific research questions were investigated with two different data sources and artifact reviews (see Table 3).

Table 3.*Dissertation Research Questions, Data Sources, and Artifact Reviews*

Research Questions	Sources of Data	Artifact Review
RQ1: What are instructor perceptions of instructor training and professional development provided by TCAT and TBR?	Instructor Interviews; Online Survey	Peer-Reviewed Articles; TCAT-K training manual and program materials
RQ1a: What do instructors see as weaknesses in the training and professional development provided?	Instructor Interviews; Online Survey	Peer-Reviewed Articles; TCAT-K training manual and program materials
RQ1b: What are the training and professional development strengths according to instructors?	Instructor Interviews; Online Survey	Peer-Reviewed Articles; TCAT-K training manual and program materials
RQ2: What professional development and/or resources are needed by the instructors?	Instructor Interviews; Online Survey	Peer-Reviewed Articles; TCAT-K training manual and program materials
RQ3: What type of teaching pedagogies/activities are most used by TCAT instructors?	Classroom Observations; Online Survey	Observation checklists; course materials

Chapter 3

Research Design and Methodology

A descriptive study was conducted to assess instructors' needs and satisfaction with training in technical colleges. Two studies, an exploratory case study (Strand 1) and an online survey study (Strand 2), were performed to answer the following research questions:

1. What are instructor perceptions of instructor training and professional development provided by TCAT and TBR?
 - a. What do instructors see as weaknesses in the training and professional development provided?
 - b. What are the training and professional development strengths according to instructors?
2. What professional development and/or resources are needed by the instructors?
3. What type of teaching pedagogies/activities are most used by TCAT instructors?

This chapter explains the research design and methodology used for this study. The participants, data collection procedures, interview protocol, observation checklist, survey methodology, research design, and data analyses are explained.

Strand 1 Design

Prior to the main dissertation study (Strand 2), a qualitative case study was completed at TCAT-K, which led to the development of the survey that was used in the current study. Strand 1 employed both observations and one-on-one interviews to examine the current study's research

questions within TCAT-K. Based on the analysis and findings of that study, a new survey was developed to be used in the current study.²

Flick (2014) defines qualitative research as “research interested in analyzing the subjective meaning or the social production of issues, events, or practices, by collecting non-standardized data and analyzing texts and images rather than numbers and statistics” (p. 542). Creswell and Poth (2017) stated that “Qualitative research begins with assumptions and the use of interpretive/theoretical frameworks that inform the study research problems addressing the meaning individuals or groups ascribe to a social human problem” (p. 8). By choosing qualitative methods, specifically a descriptive case study, the researcher was able to collect not only informative data regarding the research questions, but also information on issues that may have been brought to light through the two different qualitative methods used. Thus, qualitative methodology was imperative for analyzing instructor training specifically at technical colleges, which is drastically lacking in the literature. Rossetto (2014) found that qualitative interviews “offer participants an outlet to reflect on experiences and share feelings with a neutral, interested party” (p. 486). Regarding using observations in research, Flick (2014) contends that they tap into all of one’s senses. In addition to interviews and observations, a review of various instructor training materials was part of data collection for this study.

Interviews. To conduct Strand 1, a case study, the researcher began by explaining each aspect of Strand 1 to all possible participants as she was invited to introduce the study at the institution’s monthly faculty and staff meeting. After explaining the survey and its purpose, she then asked for participation in the current study and set up interview times, dates, and locations

² Due to extremely low participation and lack of detail within the study findings, it was decided to utilize the results of this study to develop an online survey to be used in another study (Strand 2) to more fully address the research questions.

for participants. Additionally, the investigator gave each possible participant at TCAT-K her contact information in case an instructor wanted to participate in the study but did not feel comfortable or was unable to set up the one-on-one meeting time during the staff meeting. There were 28 full-time instructors and eight part-time instructors who taught one of the on-campus programs at TCAT-K at the time of the study. It was the researcher's goal to recruit and interview one instructor from each program of TCAT-K's 19 programs offered. All TCAT-K instructors had an equal chance to participate in the one-on-one interviews, increasing the likelihood of greater data collection and possible saturation of themes regarding instructor training.

Each interview followed the Instructor Interview Study Protocol (Appendix D) developed by the researcher to confirm that each one-on-one interview was focused on the three main research questions. The interviews were recorded using the researcher's cell phone to ensure the interview transcripts were accurate and complete. The recordings were then uploaded to the researcher's private, password-protected computer, and each interview was assigned a random number to confirm that participant identifiers and their responses were confidential. The interviews were transcribed into a Word document on the researcher's computer, using Merriam and Tisdell's (2016) axial coding process, allowing for the qualitative data to be analyzed to identify codes and themes that emerged within the data. Once all the interviews were transcribed and coded, the researcher combined the results and analyzed the document to ensure codes and themes that emerged from the interviews were synonymous, and the findings were reported.

Observations. To gain a deeper understanding of instructor teaching methods at TCAT-K, observations of instructors were conducted after the one-on-one interviews were completed. A classroom observation checklist (Appendix B) adapted from Austin Community College (n.d.)

was employed for this process. While the checklist format and structure was identical, the rating scale utilized was adjusted as the researcher was not an expert within each subject and could not rate with validity whether the instructors' structure, methods, interaction, or content should be rated as "could improve," "acceptable," or "excellent." Therefore, in adapting the Classroom Observation Checklist, the ratings were changed to "classroom context," "observed," "not observed." The researcher provided an IRB approved Informed Consent Form (Appendix E) for each instructor who was observed.

During the observations, the researcher sat in the back of the classroom, as discreetly as possible so as not to disrupt the class sessions. She then filled out the observation checklist, while also taking additional notes regarding the assessment research questions. After the class session concluded, the researcher thanked the instructors for their participation and entered the observation checklist notes into a Word document. The data were then analyzed to identify themes and codes that surfaced from the observations. Lastly, the researcher compared the results from each observation analysis to identify the key themes and codes that emerged from the entire dataset.

Data Analyses. The data analyses portion of Strand 1 consisted of two separate phases (Table 4). Phase one began with the transcription of the data collected from each participant who participated in the one-on-one interviews. As each interview was completed, the researcher uploaded the interview recording to her computer and then created a Microsoft Excel spreadsheet to transcribe each interview. As they were transcribed, the researcher checked for spelling errors and removed any unique identifiers for the TCAT-K faculty, staff, or administration to ensure confidentiality.

Table 4.*Strand One: Analysis Plan*

Research Question	Data Source	Proposed Analyses
1. What are instructor perceptions of instructor training and professional development provided by TCAT-K and TBR?	Instructor Interviews	Transcribe Interviews; Cyclical Coding; Identify themes and codes within data; Run frequency report
1a- What do instructors see as weaknesses in the training and professional development provided?	Instructor Interviews	Transcribe Interviews; Cyclical Coding; Identify themes and codes within data; Run frequency report
1b- What are the training and professional development strengths according to instructors?	Instructor Interviews	Transcribe Interviews; Cyclical Coding; Identify themes and codes within data; Run frequency report
2. What professional development and/or resources are needed by the instructors?	Instructor Interviews	Transcribe Interviews; Cyclical Coding; Identify themes and codes within data; Run frequency report
3. What type of teaching pedagogies/activities are most used by TCAT-K instructors?	Classroom Observations	-Open-ended Responses: Cyclical coding to identify themes and codes within the data; -Closed-ended Responses: SPSS Codebook; Frequency Reports; Run descriptives; -Qualitative and Quantitative Responses: Run frequency reports to identify codes/themes and/or frequency percentage of responses

As each interview was transcribed, the researcher began to code the data using axial coding (Merriam & Tisdell, 2016). Upon completion of all the interview transcriptions, the researcher then combined the data, themes, and codes into one Excel spreadsheet to compare codes to determine whether any themes or codes should be combined due to similarities or be separated due to irregularities in theme or code definitions.

The second phase of data analysis focused on the classroom observation checklist utilized in the study. The purpose of the observation checklist was to inform research question 3: What type of teaching pedagogies/activities are most used by TCAT-K instructors? To analyze the data, the researcher followed Morrow and Skolits' (2017) 12 steps of data cleaning, the first step of which is to develop a codebook for the data collected, which includes the data analysis plan. Prior to the start of the observations, the researcher created a new SPSS workbook, which defined each variable and included variable labels for each statement within the observation checklist. As each observation was completed, all responses were entered into the SPSS workbook. Each open-ended comment in the checklist was also entered into an Excel spreadsheet. Once all the data were entered, the researcher ran a frequency report to identify any missing data within the dataset and any coding errors and outliers.

After ensuring all data were entered correctly, another frequency report was conducted to determine whether there were any missing data within the dataset. Because there was no missing data within the dataset, a final frequency report was conducted to verify that all possible outliers or missing data had been addressed. Based on the final frequency report, it was determined that no outliers or missing data existed within the SPSS dataset.

After the data were cleaned, the researcher ran a descriptives and frequency report to analyze frequency percentage of responses for each statement regarding class structure, methods,

and student-teacher interaction. The researcher developed several tables to identify the response percentages of the observation checklist statements that were included in an executive report to TCAT-K.

In addition to the results of the data analysis included in the SPSS workbook, the open-ended comments collected by the researcher were uploaded into an Excel spreadsheet. The data were sanitized to confirm that no names or unique identifiers were included that could identify faculty, staff, or members of the administration. Like the one-on-one interviews, the data were coded using Merriam and Tisdell's (2016) axial coding techniques fashion to identify the themes and codes that arose from the data. The results were interpreted and reported in the results section of the executive report produced for TCAT-K.

Through both interviews and observations of participants, the researcher gained a more in-depth understanding of the needs, successes, and weaknesses of TCAT-K instructor training. However, because participation in the Strand 1 was lacking, it was deemed necessary and imperative to gather information from more participants to address the research questions further. Thus, from the data analysis of Stand 1, the researcher developed a new survey instrument to be used in the current study for gathering further data from all possible participants at each TCAT location. The new online survey questions (Appendix C) were developed based on the results from Strand 1 and were linked to the original dissertation research questions. Table 4 identifies each statement/question from the new survey, based on the results of Strand 1, as well as the corresponding dissertation research question for each statement/question. More specifically, Table 5 exhibits how each statement/question informed one or more of the three main dissertation research questions.

Table 5.*Instructor Professional Development Survey Questions and Corresponding RQs*

Survey Statement/Question	Corresponding RQ
I received a employee handbook.	2
I was trained on how to develop a lesson plan.	2
I partnered with at least one other TCAT faculty member to improve my instructor ability.	2
I was assigned a TCAT faculty member who would serve as a mentor to me.	2
I read through my employee handbook in its entirety.	2
I was given time to review teaching best practices before instructing my students.	2
I received all the supplies I would need to successfully teach my students.	1
I learned how to deal with difficult/disruptive students.	1
I was taught specific classroom management skills.	2
I partnered with other instructors at TCAT to learn different teaching styles.	2
All instructor policies were clearly explained to me.	1
All student policies were clearly explained to me.	1
I gained a clear understanding of how to motivate my students.	3
I learned how to teach to students with different learning styles.	3
Please describe the instructor training you received when you started your career at TCAT.	1
What aspects of your instructor training when you started your career at TCAT did you find were the most helpful in making you a successful instructor?	1, 2, and/or 3
What aspects of your instructor training when you started your career at TCAT could have been improved in order to make you a successful instructor?	1, 2, and/or 3
Prior to working at TCAT, what previous training/experience did you have teaching students (i.e., conference trainings, webinars, mentor-mentee training)?	1
Since you have been a faculty member at TCAT, what other types of instructor training have you received while employed at TCAT?	2
What aspects of the instructor training at TCAT could be improved upon for instructors?	1
What specific training activities/lessons do you wish you had received when you began your career at TCAT?	3
What else would you like to share about the instructor training at TCAT?	1, 2, and/or 3

Strand 2 Design

While Strand 1 study sought to address the research questions of the current study, due to a small number of respondents and lack of detail in the data, it was clear that further information was needed to answer the research questions. Thus, a descriptive research study (Strand 2) was conducted utilizing a survey to address the research questions of the current study. Colton and Covert (2007) state that surveys can explore relationships, examine attitudes and beliefs, obtain sensitive information, and can be combined with other data-gathering approaches. Because the current study sought information regarding attitudes of instructors toward training, which could have been negative, a confidential survey was developed.

Recruitment of Participants. The recruitment of participants for the study took place at each TCAT location ($n = 27$). The purpose of the study was to understand the strengths, weaknesses, satisfaction levels, and instructor needs regarding training and professional development at each location. The data for this study were collected with the participants' consent, with the support of the Tennessee Board of Regents (TBR) and with the approval of the University of Tennessee's Institutional Review Board (IRB). Participants included TCAT instructors who were experienced instructors (4-plus years' experience), as well as those who were novice instructors (1-3 years' experience). As one TCAT location was used for the pilot study (Strand 1), the researcher asked that TBR exclude this location from with Strand 1 (Leon, Davis, & Kraemer, 2011; Peat, Mellis, Williams, & Xuan, 2002). presidents were asked to send the recruitment email to each TCAT instructor (Appendix F), specifying the purpose of the study, risks and benefits of participating, confidentiality of participant responses, contact information for the primary investigator and faculty advisor of the study, and a direct URL to the online survey. A series of two recruitment

emails were sent to possible participants over a 1-month time frame. At the time of the study, TCAT had a total of 527 full-time and 152 part-time instructors among all 27 locations (Table 6).

To recruit participants, TBR sent each TCAT president an email (Appendix E) asking for their participation in recruiting their instructors to participate in the survey. Specifically, the presidents were asked to send the recruitment email to each TCAT instructor (Appendix F), specifying the purpose of the study, risks and benefits of participating, confidentiality of participant responses, contact information for the primary investigator and faculty advisor of the study, and a direct URL to the online survey. A series of two recruitment emails were sent to possible participants over a 1-month time frame. At the time of the study, TCAT had a total of 527 full-time and 152 part-time instructors among all 27 locations (Table 6).

However, according to Leon, Davis, and Kraemer (2011) and Peat et al. (2002), it should be noted that participants and/or possible participants within a pilot study should not be asked to participate in the subsequent study. Therefore, the instructors from the pilot study location in Strand 1 were excluded from participation in Strand 2, resulting in a total of 499 full-time instructors and 144 part-time instructors, totaling 643 total faculty members. The desired sample size for the current study was 102 participants, calculated by conducting an independent two-sample t-test power analysis that utilized the anticipated effect size of 0.5, a power level of 0.8, and a probability level of 0.05 (Cohen, 1988). A power analysis allowed for an increased “probability of producing significant results within the study” (Cohen, 1988, p. 1). To gain the most comprehensive data and participation, recruitment emails were sent to each instructor’s TCAT email address from their perspective TCAT president because the researcher did not have access to them. Lastly, each TCAT instructor was given a study recruitment flyer (Appendix F) to post at various locations on their campuses to help increase participation in the current study.

Table 6.*TCAT Full-Time and Part-Time Instructors per Location*

Location	N Programs	FT Instructors	PT Instructors
Athens	9	45	12
Chattanooga	21	13	1
Covington	8	19	-
Crossville	17	10	2
Crump	13	18	5
Dickson	13	12	7
Elizabethton	15	30	6
Harriman	11	17	14
Hartsville	13	15	-
Hohenwald	18	20	-
Jacksboro	10	18	3
Jackson	18	12	1
Knoxville	19	28	8
Livingston	18	29	20
McKenzie	8	16	15
McMinnville	11	9	4
Memphis	23	10	8
Morristown	15	39	10
Murfreesboro	17	31	24
Nashville	19	25	12
Newbern	13	16	10
Oneida	12	13	5
Paris	12	18	4
Pulaski	15	20	5
Ripley	6	9	3
Shelbyville	14	24	18
Whiteville	9	11	2
TOTAL	377	527	152

*Note: The pilot study (Strand 1) utilized participants from TCAT-Knoxville. Therefore, both full-time and part-time instructors from TCAT-Knoxville were not asked to participate in Strand 2, resulting in a Strand 2 population of 643.

Study Participants

Strand One. Strand one consisted of two phases of data collection: interviews and observations. Interview participants included a 20.5% (n=7) response rate of TCAT-K instructors. Of the instructors who participated in the interviews, 71.4% (n=5) chose to participate in the observation portion of study one as well. Figure 1 demonstrates the participation by gender for the interview portion of study one. Similarly, within the observation portion of study one, there was a higher percentage of female participants versus male participants (Figure 2). Lastly, participants indicated the number of years they have been teaching at TCAT-K. Figure 3 indicates that 42.9% (n=3) of the participants (n=7) have been teaching at TCAT-K between 8-11 years. Whereas 28.5% (n=2) have been teaching 1-3 years. Lastly, 14.3% (n=1) indicated that they have been teaching 4-7 years or 15+ years (Figure 3).

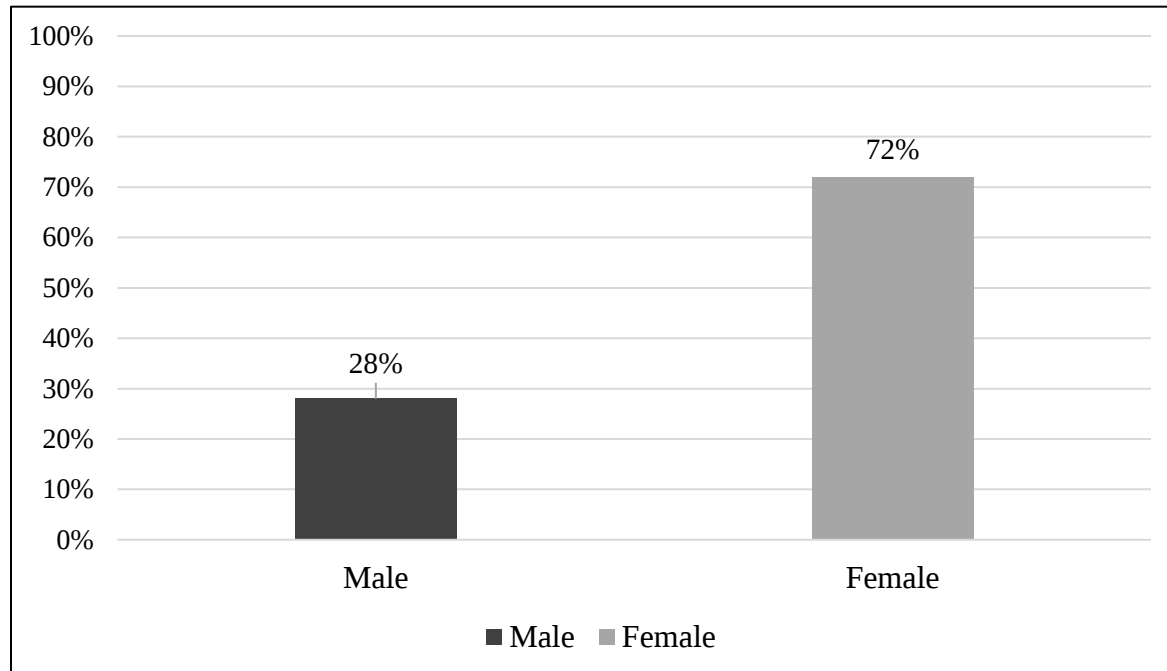


Figure 1. Strand One Interviews: Participation by Gender

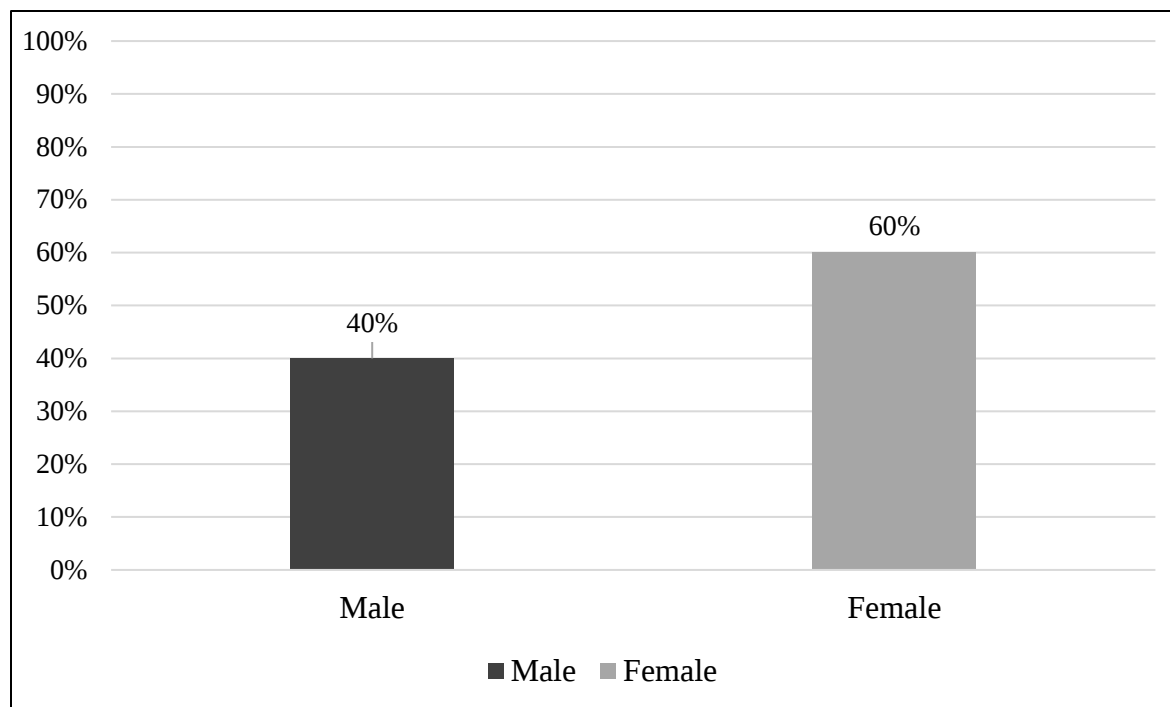


Figure 2. Strand One Observations: Participation by Gender

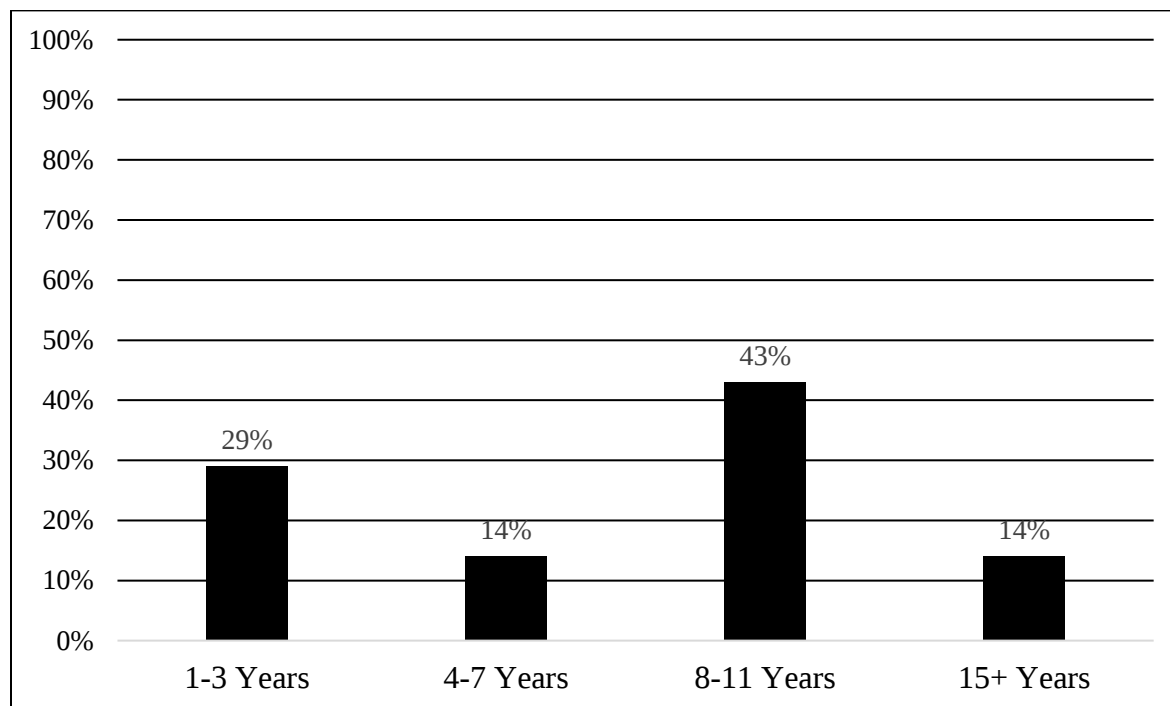


Figure 3. Strand One: Overall Participation: Years Teaching at TCAT

Strand Two. Strand two asked participants a series of demographic questions including gender, ethnicity, time teaching at TCAT, and years' experience within their industry. In addition, participants were asked what program they were an instructor of at TCAT, which allowed for the participants frequency by Holland Code. 69.4% ($n = 106$) of participants were female, 18.7% ($n = 29$) were male, and 11.9% ($n = 18$) preferred not to answer regarding their gender (Figure 4). Regarding ethnicity, an overwhelming majority of 82.2% ($n = 126$) of participants indicated they were White, whereas a total of 17.8% ($n = 27$) indicated they were either American Indian/Alaska Native, Black/African American, two or more races, or they preferred not to answer (Figure 5). Therefore, for further analysis, ethnicity was identified as either White or Non-White.

Participants indicated the length of time (years) teaching at TCAT: 20.9% ($n = 32$) indicated 0-2 years teaching, 39.2% ($n = 60$) indicated 3-5 years teaching, 13.1% ($n = 20$) indicated 6-10 years teaching, 7.2% ($n = 11$) indicated 11-15 years teaching, 6.5% ($n = 10$) 16-20 years teaching, 10.4% ($n = 16$) indicated 20+ years teaching, and 2.6% ($n = 4$) indicated 4 years teaching (Figure 6). Regarding time worked within industry, the majority of participants, 58.1% ($n = 89$) identified that they had worked within their industry field for 16-20 and 20+ years, 8.5% ($n = 13$) worked in industry 11-15 years, 21.6% ($n = 33$) indicated 6-10 years within industry, 7.2% ($n = 11$) indicated 3-5 years within industry, 2.0% ($n = 3$) working 0-2 years in industry, and 2.6% ($n = 4$) preferred not to answer how long they had worked within their industry (Figure 7).

To further analyze participant responses, participants were asked to identify the program they are an instructor for (Table 7), and Holland Codes were associated with each program based on CIP code (Figure 8). It was identified that most participant programs, 63.4% ($n = 97$), were

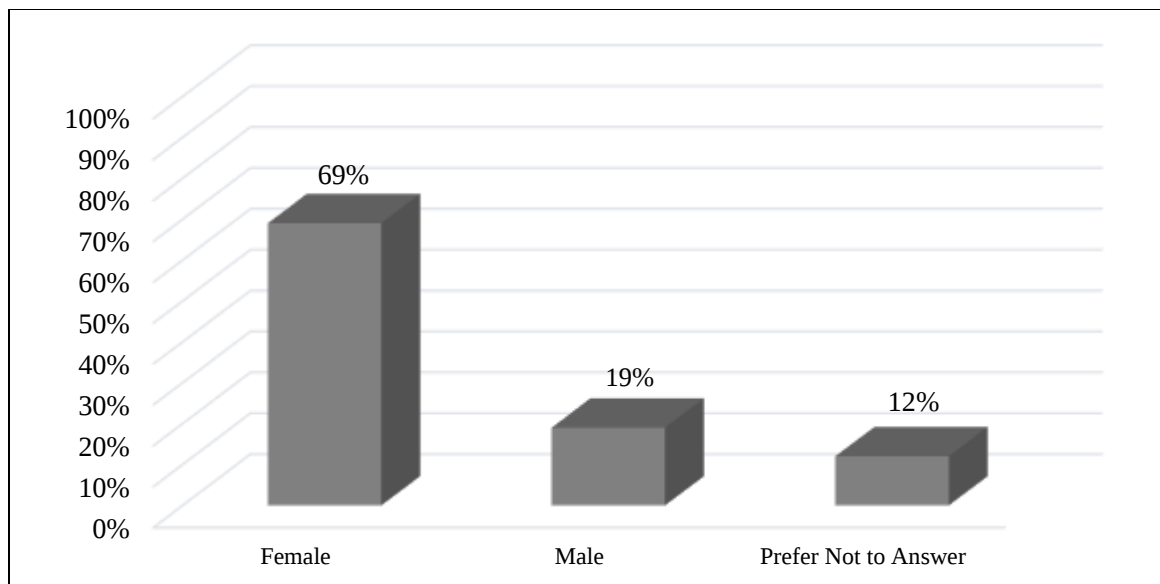


Figure 4. Strand Two: Participation by Gender

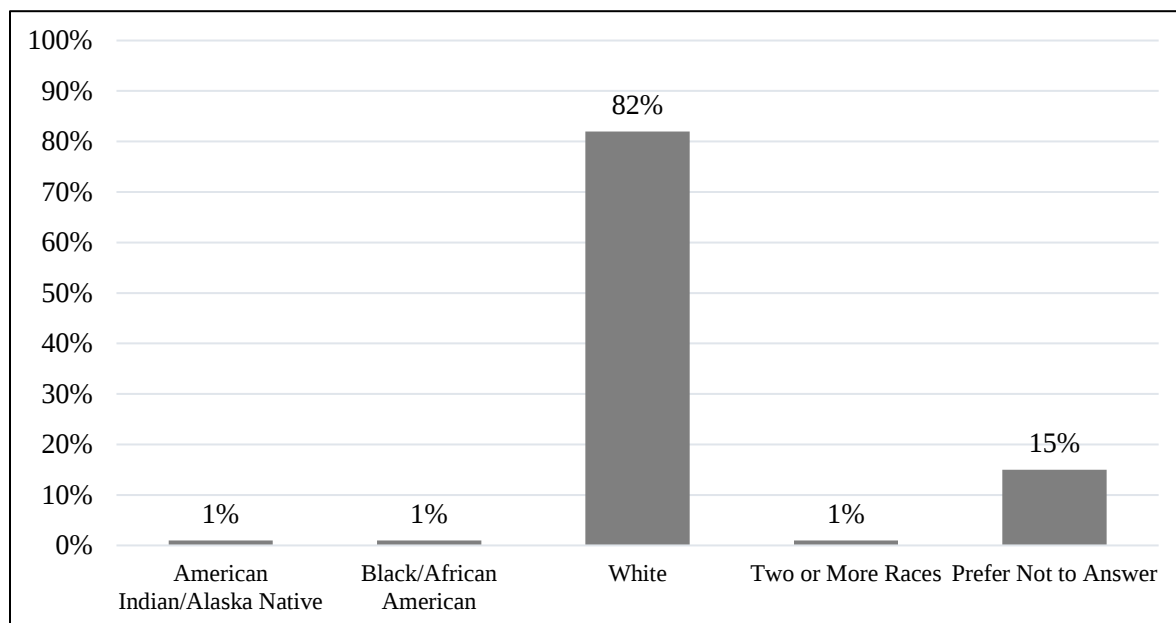


Figure 5. Strand Two: Participation by Ethnicity

*Note: Figure 5 identifies percentage participation based on ethnicity; however, due to low responses, further analysis grouped participants into two groups regarding ethnicity: White and Non-White.

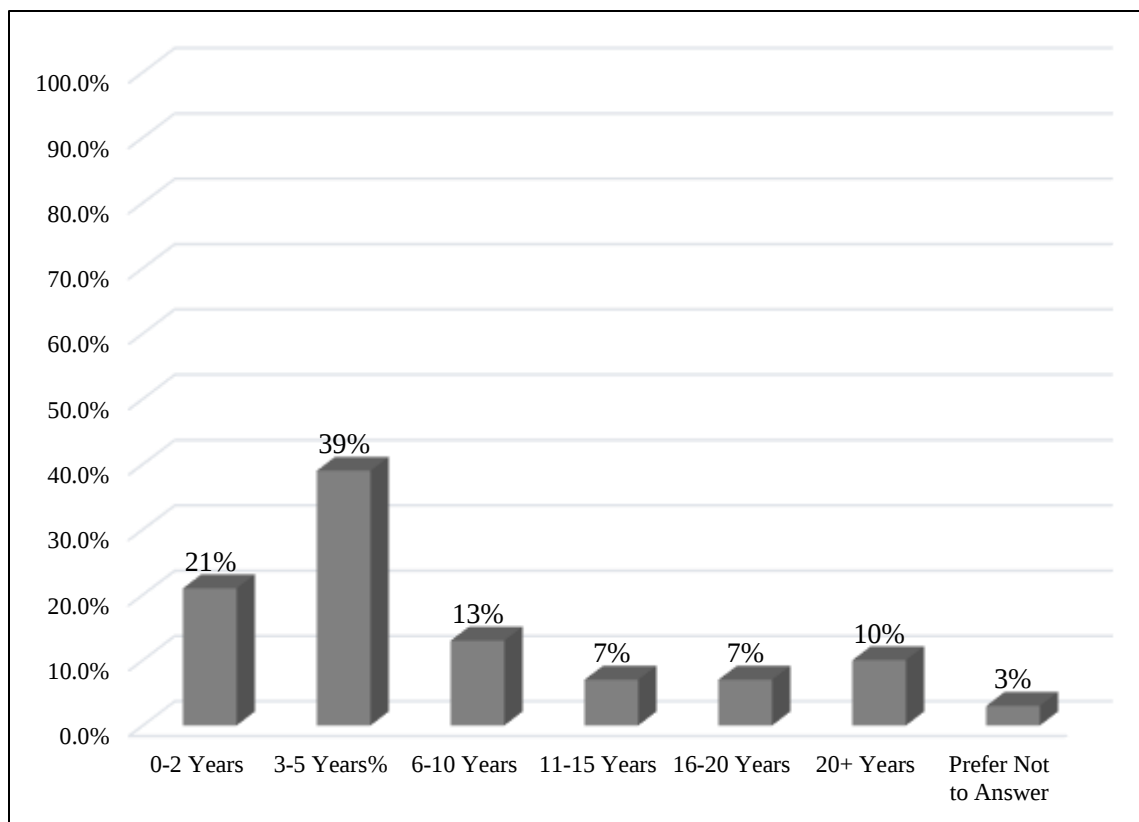


Figure 6. Strand Two: Participation by Time Teaching at TCAT

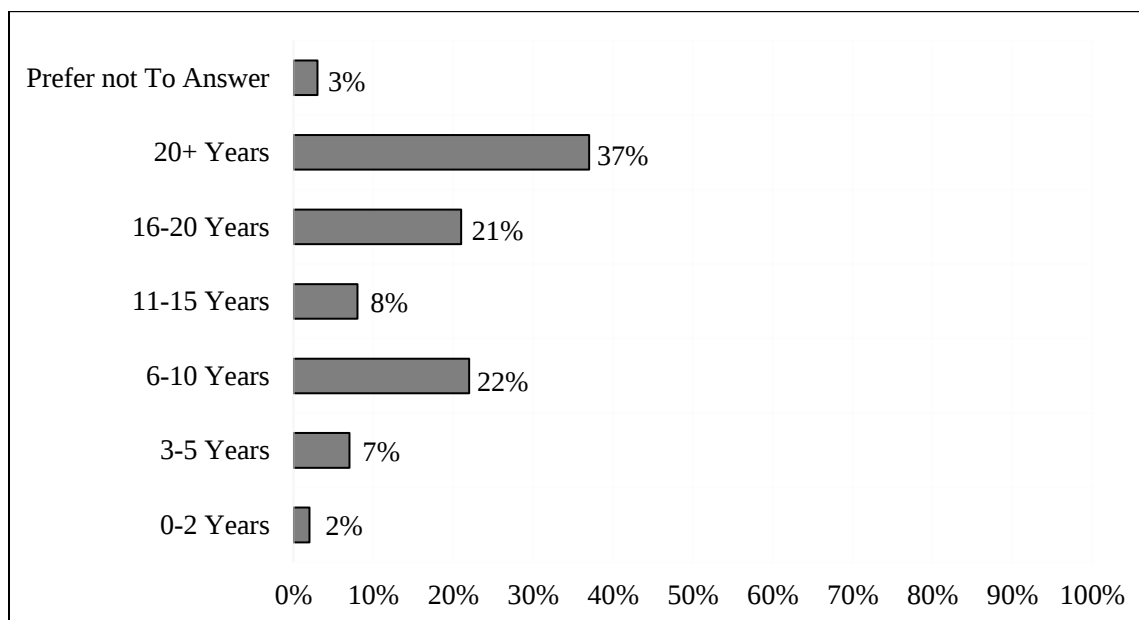


Figure 7. Strand Two: Participation by Time in Industry

Table 7.*Participation by TCAT Program*

Program	N	Frequency Percentage
Administrative Office Technology	5	3.3%
Advanced Manufacturing Production Technology	1	0.6%
Aesthetics Technology	1	0.6%
Automation Mechatronics	1	0.6%
Automation Technology	3	1.9%
Building Construction Technology	2	1.3%
Collision Repair Technology	2	1.3%
Computer Aided Design Technology	2	1.3%
Computer Information Systems	1	0.6%
Computer Information Technology	4	2.6%
Diesel Powered Equipment Technology	3	1.9%
Digital Graphic Design Technology	1	0.6%
Early Childhood Education	1	0.6%
Electrical and Plumbing Technology	1	0.6%
Health Science Education	1	0.6%
HVAC/R Technician	2	1.3%
Industrial Electricity	1	0.6%
Industrial Maintenance Mechatronics Technology	7	4.6%
Information Technology	1	0.6%
Machine Tool Technology	6	3.9%
Medical Assisting/Patient Care Technology	2	1.3%
Millwright Skills	1	0.6%
Pharmacy Technology	3	1.9%
Power Sport Technology	2	1.3%
Practical Nursing	8	5.2%
Technology Foundations	3	1.9%
Telecommunication Technology	1	0.6%
Tool and Die Maintenance Technology	11	7.2%
Welding	13	8.5%
Prefer Not to Answer	10	6.5%
No Response	53	35.6%

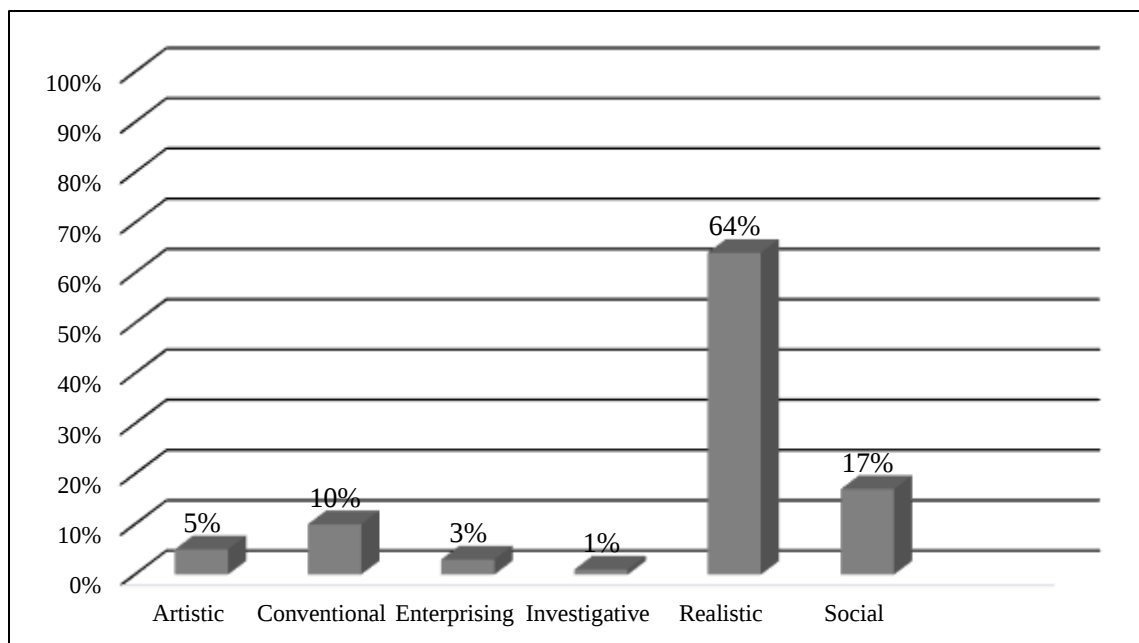


Figure 8. Strand Two: Participation by Holland Code

*Note: Figure 8 identifies participation percentage by Holland Code. Due to extremely low participation within the Holland Codes of “Artistic, Conventional, Enterprising, Investigative, and Social”, these codes were collapsed into one category (ACEIS) in further analysis within the study. The code “Realistic” remained separated from the collapsed categories.

categorized within the Holland Code of Realistic. While each other Holland Code was represented within the data, due to extremely low response rates from 1.1% ($n = 2$) to 17.2% ($n = 27$), the Holland Codes of Artistic, Conventional, Enterprising, Investigative, and Social were collapsed into one category for further analysis of the data.

Procedures and Materials

The current study used an online survey on the QuestionPro platform (QuestionPro Survey Software, 2019) to collect data from participants. The survey consisted of questions that were developed from the results of Strand 1 (exploratory case study) regarding TCAT-K instructor training needs, satisfaction, and weaknesses. The survey was designed to ensure each research question was addressed. The aforementioned Table 4 identifies the survey statements/questions and corresponding research questions.

After the researcher received approval from the Tennessee Board of Regents (TBR) and UT's Institutional Review Board (IRB), she reached out to TBR for help in sending the Instructor Recruitment email to each TCAT president employed at the time of the study (Appendix F). The recruitment email included the study's purpose, the researcher's contact information, the link to the survey, confidentiality of the data, and the faculty supervisor's contact information. It was sent to each possible participant on two separate occasions. In week three of data collection, a second recruitment email was sent to TCAT instructors. In addition, each TCAT president received a TCAT Instructor Recruitment Flyer (Appendix G), which gave a brief overview of the study's purpose, who should participate, purpose of the survey, and ways to access the survey, either through the online survey link or QR code that directed the participant to the survey. The aforementioned Table 4 identifies the survey statements/questions and corresponding research questions. The survey asked participants to answer a series of demographic questions regarding their gender, ethnicity, and other elements related to their work within TCAT. Participants were reminded that they did not have to answer any questions that made them uncomfortable.

Once a TCAT instructor decided to participate in the study, they were able to access the online survey on their personal or work computer or on their cell phone. They were prompted to review the Informed Consent (Appendix H) regarding participation, risks and benefits, confidentiality, study purpose, and researcher's contact information before starting. The survey was designed to take no more than 15 minutes to complete, and the link was open for a total of 6 weeks.

Data Analysis

The next phase of the study was to analyze the qualitative and quantitative data. As each participant completed the online survey, the qualitative data were uploaded into an Excel spreadsheet and sanitized for any unique identifiers. As qualitative comments were collected, the researcher coded them in an axial coding fashion (Merriam & Tisdell, 2016). After all data were coded and any relationships within the qualitative data were identified, a table was created that identified each code, percentage of occurrence, and sample statements to explain each code further.

The next phase of data analysis focused on the quantitative data gathered from the survey. For the analysis, the researcher followed Morrow and Skolits' (2017) 12 steps of data cleaning, where the first step is to develop a codebook for the data collected, which includes the data analysis plan. Prior to the start of data collection, the researcher created a new SPSS workbook to define each variable and included variable labels for each statement within the quantitative statements/questions from the survey. As each survey was completed, all responses were entered into the SPSS workbook. After entering all of the data, the researcher ran a frequency report to identify any coding errors and/or outliers. After reviewing the report, the researcher re-entered any incorrect data into the SPSS workbook

After verifying that all data were entered correctly, another frequency report was run to identify whether there were any missing data within the dataset. To correct for missing information, the researcher recoded it as "99" if the variable was not applicable. However, if the data were truly missing, the researcher entered the missing value using the grand mean value of the variable (Tabachnick & Fidell, 2013). A frequency report was run a final time to ensure there were no outliers or missing data that were not addressed.

Once the data were cleaned, the researcher created a descriptives and frequency report to analyze the percentage of responses for each quantitative statement within the survey. In addition, several independent *t*-tests were conducted to analyze each research question based on discrete identifiers (e.g., gender and ethnicity) to identify any significant differences among groups. To conduct the independent *t*-test on ethnicity, data were collapsed into either White ($n = 95$) or Non-White ($n = 23$) categories to identify possible significant effects based on ethnicity (Warrens, 2011). Further analyses were conducted, including multiple regressions for quantitative data and axial coding for qualitative data (Table 8). Based on the findings of each analysis, the results were interpreted and reported in the Results section of this dissertation.

Table 8.*Strand Two: Analysis Plan*

Research Question	Data Source	Proposed Analyses	Visuals
1. What are instructor perceptions of instructor training and professional development provided by TCAT-K and TBR?	Quantitative Items: 7, 8, 11, & 12; Qualitative Items: 1-4, 6, & 8	1) <u>Quantitative Items:</u> 1a) Frequency Percent of Responses; 1b) Independent <i>t</i> -Tests assessing gender and ethnicity differences; 1c) Independent <i>t</i> -test analyzing significant differences between Holland Code; 2) <u>Qualitative Items:</u> 2a) Axial coding to identify codes and themes within data;	1a) Frequency percentage table with percentage of respondents who agree-strongly agree; 1b) Frequency percentage tables comparing each subgroup identified; 1c) Report <i>p</i> -value and significance; 2a) Tables identifying codes identified, frequency percentage of codes, and sample statements;
1a- What do instructors see as weaknesses in the training and professional development provided?	Quantitative Items: 7, 8, 11, & 12; Qualitative Items: 1-4, 6, & 8	1) <u>Quantitative Items:</u> 1a) Frequency Percent of Responses; 1b) Independent <i>t</i> -Tests assessing gender and ethnicity differences; 1c) Independent <i>t</i> -test analyzing significant differences between Holland Code; 2) <u>Qualitative Items:</u> 2a) Axial coding to identify codes and themes within data;	1a) Frequency percentage table with percentage of respondents who agree-strongly agree; 1b) Frequency percentage tables comparing each subgroup identified; 1c) Report <i>p</i> -value and significance; 2a) Tables identifying codes identified, frequency percentage of codes, and sample statements;
1b- What are the training and professional development strengths according to instructors?	Quantitative Items: 7, 8, 11, & 12; Qualitative Items: 1-4, 6, & 8	1) <u>Quantitative Items:</u> 1a) Frequency Percent of Responses; 1b) Independent <i>t</i> -Tests assessing gender and ethnicity differences; 1c) Independent <i>t</i> -test analyzing significant differences between Holland Code; 2) <u>Qualitative Items:</u> 2a) Axial coding to identify codes and themes within data;	1a) Frequency percentage table with percentage of respondents who agree-strongly agree; 1b) Frequency percentage tables comparing each subgroup identified; 1c) Report <i>p</i> -value and significance; 2a) Tables identifying codes identified, frequency percentage of codes, and sample statements;

Table 8. Continued.*Strand Two: Analysis Plan*

Research Question	Data Source	Proposed Analyses	Visuals
2. What professional development and/or resources are needed by the instructors?	Quantitative Items: 1-6, 9, & 10; Qualitative Items: 2, 3, 5, & 8	1) <u>Quantitative Items:</u> 1a) Frequency Percent of Responses; 1b) Independent <i>t</i> -Tests assessing gender and ethnicity differences; 1c) Independent <i>t</i> -test analyzing significant differences between Holland Code; 2) <u>Qualitative Items:</u> 2a) Axial coding to identify codes and themes within data;	1a) Frequency percentage table with percentage of respondents who agree-strongly agree; 1b) Frequency percentage tables comparing each subgroup identified; 1c) Report <i>p</i> -value and significance; 2a) Tables identifying codes identified, frequency percentage of codes, and sample statements;
3. What type of teaching pedagogies/activities are most used by TCAT-K instructors?	Quantitative Items: 13 & 14; Qualitative Items: 2, 3, 7, & 8	1) <u>Quantitative Items:</u> 1a) Frequency Percent of Responses; 1b) Independent <i>t</i> -Tests assessing gender and ethnicity differences; 1c) Independent <i>t</i> -test analyzing significant differences between Holland Code; 2) <u>Qualitative Items:</u> 2a) Axial coding to identify codes and themes within data;	1a) Frequency percentage table with percentage of respondents who agree-strongly agree; 1b) Frequency percentage tables comparing each subgroup identified; 1c) 1c) Report <i>p</i> -value and significance; 2a) Tables identifying codes identified, frequency percentage of codes, and sample statements;

Chapter 4

Presentation of Study Findings

Introduction

The purpose of the current descriptive research study was to identify the professional development needs, strengths, and weaknesses of current Tennessee College of Applied Technology (TCAT) instructors. A newly developed online survey, with both qualitative and quantitative statements and/or questions, was completed by 153 participants from various TCAT locations. The online survey data collection took place from May 20, 2019, until June 14, 2019. The study was driven by the following three research questions:

1. What are instructor perceptions of instructor training and professional development provided by TCAT and TBR?
 - a. What do instructors see as weaknesses in the training and professional development provided?
 - b. What are the training and professional development strengths according to TCAT instructors?
2. What professional development and/or resources are needed by TCAT instructors?
3. What type of teaching pedagogies/activities are most used by TCAT instructors?

This chapter provides the analyses conducted to analyze the data collected. In addition, study findings will be presented based on each aforementioned research question. Lastly, findings are discussed based on various analyses examining participants' demographics and survey responses.

Overview of Data Cleaning and Analysis

Quantitative Data. Quantitative data were collected within the QuestionPro, an online survey website, and the raw data were then exported to an Excel workbook. Within the Excel workbook, the raw data were sorted into different workbooks based on whether they were quantitative data, qualitative data, or demographic data. A copy of the raw quantitative data and the demographic data was exported into a new Excel workbook tab, which was then exported into SPSS.

Once the raw data were uploaded into SPSS, variable name corresponding to each quantitative statement and demographics statement/questions were input into the SPSS dataset. For each quantitative statement, variable labels were created to explain the variable name, and value labels were assigned based on the Likert scale utilized (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5 = Strongly Agree, and 6 = Not Applicable).

In order to clean the data, a frequency report was conducted to identify missing data and/or outliers (Morrow & Skolits, 2014). No outliers were identified within the data; however, missing data were recoded as “99” (Morrow & Skolits, 2014). As identified through an additional frequency report, cases with more than 20% ($n=53$) missing survey data were deleted from the dataset (Tabachnick & Fidell, 2013). Once these cases were removed from the dataset, a third frequency report was conducted to again check for missing data. It was identified that within the 153 cases and 14 variables, there was only 0.5% ($n = 11$) missing data within the dataset and no more than one variable with missing data was identified per case. Thus, the variable mean was utilized to impute the missing data, as using the individual mean where data has less than 10% missing data will “produce a Kappa statistic greater than 0.81 indicating ‘near

perfect agreement’’ (Shrive, Stuart, Quan, & Ghali, 2006, p. 4). A final frequency report was conducted to ensure no outliers nor missing data remained within the quantitative data.

Qualitative Data. The qualitative data captured within QuestionPro were downloaded with the original dataset into an Excel workbook. Each qualitative statement/question and the corresponding responses were then divided into separate pages within the Excel workbook. Utilizing Merriam and Tisdell’s (2016) axial coding technique, data were coded for each question initially by identifying codes that emerged based on participants’ responses and identifying relationships between the codes. Codes were identified upon the initial analysis of the data and assigned to each qualitative statement that corresponded to the codes that emerged from the data. After the initial coding was completed, the researcher reviewed each statement and corresponding code to identify whether additional codes were identified. This process was repeated for a third time. Once all the codes were identified, the researcher looked for specific relationships within the codes, thus identifying various themes within the data (Merriam & Tisdell, 2016). During the coding process, all unique identifiers were eliminated to ensure confidentiality of the data and participants was upheld. This process was repeated for each qualitative statement/question.

Strand 1 Results

Within Strand 1, participants were asked various interview questions to gain a more in-depth understanding of professional development opportunities for instructors as they began their teaching career at TCAT-K (Table 9).

Interview participants identified that if they received the employee handbook upon hire, they were unsure of policies and procedures and the handbook lacked information to help them prepare for teaching within their classrooms. Furthermore, based on interview responses, there

Table 9.*Strand One: Professional Development Qualitative Themes*

Code	Percent Occurrence	Statement Examples
Instructor/Org. Weaknesses	24.2%	Honest to goodness from the time I've worked here, I've been here for several years, I have never ever, except when I've invited them, had anybody from administration come in and sit in my class and listen to me, or so how I interact, or how I present my courses. No one. Well, we don't have Blackboard in the classrooms. We, not all the classrooms have computers in them. So, you can't use and e-book in the classroom because not all of them have computers with them. And that's something that I don't understand why there hasn't been funding to allow every classroom to have a certain amount of computers to utilize e-books.
Issues Upon Arrival at TCAT-K	21.1%	I really didn't get any prep time to go through the books, go through any of the testing materials, any of that stuff. I don't remember it [observing another instructor] being particularly helpful because I was so stressed out and my mind was going a mile a minute trying to figure out um, how I could, you know what I was going to do. I didn't know how to use the media equipment at all and I was trying to figure out what she was doing at the same time I was listening to her. So mostly, just kind of sitting there watching.
Training Received After Hiring	15.5%	Over time, as we had, uh, for instance, like new attendance system comes in to play, that happened within two or three years of me being here, we had a new way of reporting attendance, grades and things like that. We did have some staff training on that, but it was during, uh, probably in-service week and it was maybe a day long. A little training day kind of thing. We've had active shooter training a couple of different types of active shooter training and that's been helpful. We've had somebody come and did, he was a former TBA, and he did just situational awareness and um, also covered a lot of the active shooter stuff. Over time, as we had, uh, for instance, like new attendance system comes in to play, that happened within two or three years of me being here, we had a new way of

Table 9. Continued.*Strand One: Professional Development Qualitative Themes*

Code	Percent Occurrence	Statement Examples
		reporting attendance, grades and things like that. We did have some staff training on that, but it was during, uh, probably in-service week and it was maybe a day long. A little training day kind of thing.
Training Received Upon Hiring	13.2%	Most of the training I got was more how to enter your time, how to enter attendance, uh but it wasn't how to teach. I had some recommendations from uh, my assistant director at the time and she said "think of the best teacher you ever had and imitate that teacher. Of the handbook itself, just being able to figure out protocol of who to go to, chain of command. It discusses about what to do as far as discrimination, if there is a verbal complain of discrimination/harassment, what do we need to do for the students in each case.
Partnerships/ Collaborations with Other TCAT Instructors	10.8%	I think it was very helpful to have an instructor sit down with me and show me those things like how do you make a test instead of saying of here's the test maker, go do it. Or showing me how to use things like the scantron. Allowing me to go in on more than one instructor and see the different techniques. And I really felt like my team took me under their wing. So, to have that type of training and be able to observe the classrooms, I think that was very important.
TCAT Characteristics	8.3%	It's wonderful. You know I mean they're very welcoming and willing to answer any question you have, but they're so busy too that they'll, they're happy to show you anything, but you also know they don't really have time to sit down and show you everything. Administration just seems very, very separate from what we do back here especially because we have a single practical nurse coordinator at the time.
Instructor Attrition Reasons	6.9%	But a lot of times, at least in the past, people have left really suddenly. That's where we lose a lot of our staff is within that first couple of years. They come in with the idea that they're going to be able to, I'm going to be able to teach this because this is something that I like to do and I'm good at it.

appeared to be a disconnect between administration and instructor needs upon hire and within their teaching time at TCAT-K. Thus, identifying a need for further professional development based on lack of professional development and personal growth opportunities within the classroom.

To further identify teaching practices utilized within the classroom, TCAT-K instructors were asked to participate in the observation portion of Strand 1. An observation checklist was adapted from a checklist (Appendix B) created by Austin Community College (n.d.) and was utilized to identify classroom professional development practices. Data collected within the observations pertained to class structure, teaching methods, and teacher-student interaction. Table 10 identifies the frequency percentage of occurrence for specific behaviors observed within various TCAT-K classrooms and corresponds that behavior to one of the three research questions.

Observation data indicated that a large majority, if not all participant's teaching practices involved all aspects within Strand 2's observation checklist. However, regarding the method of "Employs other tools/instructional aids (i.e. technology, computer, video, overheads)" only 40% of participants were observed utilizing other methods to instruct their courses. However, it was evident from the observation data collected that the majority of participants utilized various pedagogies within the classroom, while also appearing knowledgeable of the content within their lessons.

Due to the low levels of participation and the analysis of the interview and observation data, it was determined that to gain a more in-depth understanding of instructor professional development needs, the current study should evolve into a larger study that involved a larger number of possible participants. Thus, Strand 2 was developed to further identify instructor

Table 10.
Strand One: Observation Classroom Behaviors

Category	Behaviors Observed	Corresponding RQ	Frequency Percent of Occurrence
Class Structure	Reviews previous day's course content.	RQ 3	80.0%
	Gives overview of day's course content.	RQ3	60.0%
	Summarizes course content covered.	RQ3	80.0%
	Directs student preparation for next class.	RQ3	80.0%
Methods	Provides well-designed materials.	RQ2	100.0%
	Employs non-lecture learning activities (i.e. small group discussion, student-led activities).	RQ3	80.0%
	Invites class discussion.	RQ3	100.0%
	Employs other tools/instructional aids (i.e. technology, computer, video, overheads).	RQ3	40.0%
	Delivers well-planned lecture.	RQ3	80.0%
Teacher-Student Interaction	Solicits student input.	RQ3	100.0%
	Involves a variety of students.	RQ3	100.0%
	Demonstrates awareness of individual student learning needs.	RQ2	100.0%
	Appears knowledgeable.	RQ1	100.0%
	Appears well organized.	RQ1	100.0%
	Explains concepts clearly.	RQ3	100.0%
	Relates concepts to students' experience.	RQ3	100.0%
	Selects learning experiences appropriate to level of learning.	RQ3	100.0%

professional development needs within a technical college, specifically the Tennessee College of Applied Technology locations.

Strand 2 Results

Demographic Data. The demographic data were downloaded to an Excel workbook with the entire dataset. It was then exported into an SPSS file. Upon being exported to SPSS, variable names, data labels, and values were created (e.g., Gender: 1 = Male, 2 = Female, 3 = Prefer Not

to Respond). Demographic variables of “what program are you affiliated with at TCAT” and “ethnicity” were recoded into a new variable that combined all responses, and data labels and values were assigned. Participants were also asked to identify their program at TCAT. A new variable was developed from these programs and each program was recoded into one of the six Holland Codes (Artistic, Conventional, Enterprising, Investigative, Realistic, and Social) based on the CIP code of the program. A frequency report was conducted on all demographic data to identify any possible outliers or missing data. No outliers were identified; however, missing data was identified for all variables and recoded as “99.” As the demographic information helped to identify the participant demographics, missing data were treated as such and not included in the overall demographic analyses.

Research Question 1. The first research question (RQ1) sought to assess the instructor perceptions of instructor training and professional development provided by TCAT and TBR. In addition, research question one’s goal was to also identify the strengths and weaknesses in the instructor training received from each participant’s perspective and experience. Four closed-ended statements were included in the survey corresponding to RQ1: I received all the supplies I would need to successfully teach my students; I learned how to deal with difficult/disruptive students; all instructor policies were clearly explained to me; and all student policies were clearly explained to me (Table 11).

Table 11.

RQ1: Instructor Responses: Strongly Agree — Agree

Statement	Percentage Strongly Agree-Agree
I received all the supplies I would need to successfully teach my students.	54.2%
I learned how to deal with difficult/disruptive students.	50.9%
All instructor policies were clearly explained to me.	40.5%
All student policies were clearly explained to me.	48.4%

**Note:* Data includes responses from the entire sample of participants.

To further assess RQ1, statements were analyzed to identify the mean of each statement based on Holland Code (Table 12).

As indicated by Table 12, mean scores based on Holland Code for each quantitative statement in RQ1 ranged from 1.7-3.7 on a 5-point Likert scale. Thus, indicating overall level of agreement with each statement based on Holland Code showed low to neutral levels of agreement overall.

Due to the low response rates for the Holland Codes of Artistic (1), Enterprising (3), and Investigative (4), all codes, except for Realistic (5), were condensed into one variable, resulting in two difference groups: Realistic and Non-Realistic. After the mean scores were assessed, several independent *t*-tests were conducted to identify whether there were any significant differences in mean responses to the statement of RQ1 based on the participant's Holland Code (Gravetter & Wallnau, 2017). In order to correct for a Type I error, a Bonferroni Correction was made to the alpha levels within each independent *t*-test, resulting in an alpha level of $p \leq .0125$ (Weisstein, 2019). Regarding each of the four statements, the independent *t*-tests indicated that there were no significant differences in mean responses between the groups based on the Holland Code for any statement.

To further analyze the levels of agreement surrounding RQ1, an independent *t*-test was conducted based on gender (male, female) (Table 13). The independent *t*-test showed differing levels of agreement per statement based on gender, *p*-values were $> .05$. Thus, indicating that there were no statistical differences on levels of agreement based on gender for RQ1. Therefore, there was no association between responses based on gender.

Table 12.*RQ1: Instructor Responses: Mean Scores and Standard Deviations Based on Holland Codes*

Statement	Mean Scores and Standard Deviations							
	Holland Code							All Participants
	Mean and SD	A (N=5)	C (N=9)	E (N=3)	I (N=1)	R (N=59)	S (N=16)	
I received all the supplies I would need to successfully teach my students.	Mean	3.0	3.7	2.0	2.0	3.3	3.4	3.3
	SD	1.0	0.71	1.00	n/a	1.34	1.41	1.29
I learned how to deal with difficult/ disruptive students.	Mean	3.0	2.7	2.7	2.0	3.4	3.1	3.2
	SD	1.58	1.41	1.53	n/a	1.16	1.36	1.27
All instructor policies were clearly explained to me.	Mean	2.4	3.0	1.7	2.0	3.0	2.9	3.0
	SD	1.14	1.12	1.15	n/a	1.17	1.53	1.19
All student policies were clearly explained to me.	Mean	3.2	3.6	1.7	2.0	3.1	3.2	3.2
	SD	1.09	1.12	1.15	n/a	1.17	1.65	1.22

*Note: Rating scale for each statement/question: Strongly Disagree (1), Disagree (2), Neither Agree nor Disagree (3), Agree (4), Strongly Agree (5), Missing (6).

**Note: Holland Codes: Artistic (A), Conventional (C), Enterprising (E), Investigative (I), Realistic (R), Social (S).

Table 13.*RQ1: Agreement Frequencies Based on Gender of TCAT Instructor*

Statement	Male (n = 25) Percentage Agree- Strongly Agree	Male Mean and Standard Deviations	Female (n = 81) Percentage Agree- Strongly Agree	Female Mean and Standard Deviations
I received all the supplies I would need to successfully teach my students.	44.0%	Mean 3.24	48.4%	Mean 3.38
		SD 1.34		SD 1.29
I learned how to deal with difficult/disruptive students.	44.0%	Mean 3.14	43.0%	Mean 3.23
		SD 1.46		SD 1.22
All instructor policies were clearly explained to me.	12.0%	Mean 2.52	40.9%	Mean 3.09
		SD 1.25		SD 1.18
All student policies were clearly explained to me.	28.0%	Mean 3.01	47.3%	Mean 3.30
		SD 1.38		SD 1.19

*Note: 47 participants did not identify their gender, so these data were not included in agreement frequency percentage based on gender.

**Note: *t*-test results of $p > .05$. Therefore, no significance regarding gender and level of agreement.

An additional *t*-test was conducted to examine the relationship of responses based on ethnicity (White, Non-White) (Table 14). Similarly, to the analysis conducted with gender differences, the analysis showed differing levels of agreement per statement based on ethnicity. However, for the statements “I received all the supplies I would need to successfully teach my students” and “All student policies were clearly explained to me” the analysis identified there to be a statistically significant difference in response between White and Non-White participants where $p < .05$.

Six open-ended statements/questions corresponded with RQ1: Please describe the instructor training you received when you started your career at TCAT; What aspects of your instructor training when you started your career at TCAT did you find were the most helpful in making you a successful instructor; What aspects of your instructor training when you started your career at TCAT could have been improved in order to make you a successful instructor; Prior to working at TCAT, what previous training/experience did you have teaching students (i.e., conference trainings, webinars, mentor-mentee training); What aspects of the instructor training at TCAT could be improved upon for instructors; and, What else would you like to share about the instructor training at TCAT (Table 15-20).

The first open-ended statement examined was “Please describe the instructor training you received when you started your career at TCAT.” Table 15 depicts the overall themes, percentages of themes, sub-themes, and sample quotes identified through the qualitative data collected. Based on responses, the theme of “Partnerships” had the highest percentage of occurrence within sub-themes of “partnered with instructors,” “observed instructors,” “shadowed instructors,” and “meeting with director.” While this theme accounted for 32.3% of responses, 30.9% of responses identified they received no training at all. 21.2% of responses were focused

Table 14.*RQ1: Agreement Frequencies Based on Ethnicity of TCAT Instructor*

Statement	White (n = 95) Percentage Agree- Strongly Agree	White Mean and Standard Deviations	Non-White (n = 24) Percentage Agree- Strongly Agree	Non-White Mean and Standard Deviations
I received all the supplies I would need to successfully teach my students.	49.1%	Mean 3.46	29.1%	Mean 2.56
		SD 1.25		SD 1.34
I learned how to deal with difficult/disruptive students.	40.9%	Mean 3.17	50.0%	Mean 3.04
		SD 1.27		SD 1.46
All instructor policies were clearly explained to me.	35.5%	Mean 3.04	25.0%	Mean 2.48
		SD 1.23		SD 1.24
All student policies were clearly explained to me.	44.5%	Mean 3.33	29.2%	Mean 2.43
		SD 1.23		SD 1.31

*Note: 34 participants did not identify their ethnicity, so these data were not included in agreement frequency percentage based on gender.

on individualized training upon initial TCAT training, including an orientation, hands-on training, new instructor training, a 1-day class, computer training, and access to the curriculum they would be teaching. However, 5.2% of responses indicated that minimal training was received. Lastly, only 2.9% of responses indicated that required training of receiving an employee handbook and participating in human resources training was received when hired.

The second open-ended statement “What aspects of your instructor training when you started your career at TCAT did you find were the most helpful in making you a successful instructor?” included four main themes within the data: Instructor-Assisted, Lack of Training, Personal Contributions, and TCAT Training. Almost half of the responses indicated that

Table 15.*RQ1: Qualitative Responses: Initial TCAT Instructor Training Received*

Theme	Percentage of Theme	Sub-Theme	Sample Quotes
Partnerships	32.3%	Partnered with Instructors	I came into class with the instructor who was going to another faculty and observe her lecture and she showed me some of the programs used for various courses, recording attendance, giving test and recording grades.
		Observed Instructors	
		Shadowed Instructors	
		Meeting with Director	
No Training	30.9%	None	I basically received no formal training. I've been learning as I go. None.
Individualized	21.2%	New Instructor Training	I went to the new instructor training when I started. The previous instructor shared their materials and methods that had proven successful in the past.
		Orientation	
		Given Curriculum	
		1-Day Class	
		Hands-on Training	
Minimal Training	5.2%	Classroom Keys	Was given keys and shown classroom.
		Shown Classroom	Given keys.
Required Training	2.9%	Human Resources Training	A Handbook was provided. Each person had to read it, and the rest was up to us as individuals.
		Employee Handbook	I received on the job training in dealing with time and record keeping. I also received Title VI and IX training.

*Note: 7.5% of responses were not applicable to the statement participants were asked to answer and were not included in Table 15.

partnerships with other instructors and classroom management training were vital to the success of the participants when they began their career at TCAT. However, it should be noted that, similar to qualitative statement one, while partnerships with other instructors were key factors in setting instructors up for success, lack of training continued to be the second most frequent theme identified by participant response (Table 16).

Table 16.

RQ1: Qualitative Responses: Most Helpful Training Received

Theme	Percentage of Theme	Sub-Theme	Sample Quotes
Instructor-Assisted	49.2%	Partnerships	Student engagement and instructor support from other instructors.
		Classroom Management	The observations and guidance from veteran instructors had biggest influence.
Lack of Training	19.7%	Little to No Training	Very little training.
		Nothing	There has not been any instructor training, I went to new instructor orientation a year after starting.
Personal Contributions	18.1%	Personal Initiatives	Communication and asking question to other instructors.
		Asking Questions	
		Prior Knowledge	I have figured it out myself.
TCAT Training	13.0%	Orientation	Nothing when I started; however, with in-service and meeting fellow state-wide instructors did I receive helpful information.
		New Instructor Training	
		In-Service	
		Resources	
		Online Training	

**Note:* The code “All Training Aspects” contributed to the “TCAT Training,” “Instructor-Assisted,” and “Personal Contributions” themes and contributed 2.5% of each theme's frequency percentage.

Table 17.*RQ1: Qualitative Responses: Initial Training Improvement Suggestions*

Theme	Percentage of Theme	Sub-Theme	Sample Quotes
Structure	30.2%	Communication	I think a lot more time and help need to be offered to new instructors. We are not trained educators. We are tradesmen.
		Instruction	
		Organization	We need step-by-step instructions for very common tasks.
		Partnerships	
		Resources	I feel that at least one day should be dedicated to new instructor training. It should be planned out and organized.
		Time	
Topics	27.6%	Classroom Management	More training on successful classroom practices for adult learners.
		Technology	Training tutorials and hands-on training with SIMS database prior to receiving students.
Administrative	15.5%	Human Resources	A more complete instructor orientation.
		Orientation	A formal training program could be developed to teach incoming instructors school policies, grading policies, disciplinary policies, etc....
		Policies and Procedures	
Training	15.5%	Training	Actual training. Anything other than being handed keys and told good luck.
Nothing	7.0%	None	None that I can think of at the moment. Nothing.

*Note: 4.2% of responses were not applicable to the statement participants were asked to answer and were not included in Table 17.

**Note: 114 open-ended comments were coded with some statements being coded more than once based on detail of responses. 142 total coding occurrences.

The data from third open-ended question, “What aspects of your instructor training when you started your career at TCAT could have been improved in order to make you a successful instructor” identified five overall themes with 13 sub-themes (Table 17). Participants indicated a need for structured training, including communication of training, training instructions, organization of training, partnerships within training, training resources, and time to train. Topics that participants suggested to expand training dealt with classroom management best practices and technology utilized within the classroom. Additionally, various administrative aspects were discussed, such as increase human resources training, incorporating a scheduled and organized orientation, and a formal introduction to all policies and procedures. Additionally, participants suggested that training in general was necessary to their success as they began their career at TCAT. Lastly, a small percentage of participants stated that they had no suggestions for initial training improvements.

The fourth open-ended question for RQ1, asked participants to identify any prior teaching or training experiences with students that had received prior to working at TCAT. As shown in Table 18, 33.7% of participants indicated they had some form of experience within their job role outside of education where they were responsible for training and leading others. Regarding actual classroom instruction experience, 25.9% of respondents indicated they had prior experience; however, that experience was in a variety of topics and did not necessarily relate to their current program at TCAT. Some participants indicated that while they did not have specific teaching experience within their own classroom, they did have teaching experience in other venues, such as within their church, in the military, as a specific trainer within their field, and through their own personal educational experiences. Lastly, 18.1% of participants stated they had no prior teaching experience when hired at TCAT.

Table 18.*RQ1: Qualitative Responses: Prior Training/Experience*

Theme	Percentage of Theme	Sub-Theme	Sample Quotes
Organization/Industry Teaching Experience	33.7%	Employee Trainer	Gave on job training to new employees, not students.
		Supervisor	As an older student going through this program myself, I was able to assist with younger students' learning experience.
		Industry Trainer	
		Peer Training	
Classroom Teaching Experience	25.9%	Music Instructor	I had previously tutored students and had experience both in class and online during my teaching practicums.
		Prior Teaching Experience	Community College Instructor for the same subject matter.
		Substitute Teacher	
		Tutor	28 years of instructional experience.
Other Experience	22.3%	Military Instructor	Sunday school teacher.
		Church Educator	My master's education.
		Industry Experience	
		Personal Education	
None	18.1%	No Prior Teaching Experience	I have had no prior teaching experience.
			None.

**Note:* 114 open-ended comments were coded with some statements being coded more than once based on detail of responses. 130 total coding occurrences.

The fifth open-ended question asked participants to identify what aspects of the instructor training at TCAT could be improved upon for instructors beyond just the initial instructor training. Participants responses included training suggestions from initial hire throughout their tenure at TCAT. Suggesting continued professional development is strongly desired for TCAT instructors, in addition to specific topics within an instructor's initial hire training. Participants identified various topics for improvement regarding initial and continued development (Table 19).

Table 19.

RQ1: Qualitative Responses: Suggestions for Improvement

Theme	Percentage of Theme	Sub-Theme	Sample Quotes
TCAT Training	37.5%	Orientation	Nothing when I started; however, with in-service and meeting fellow state-wide instructors did I receive helpful information.
		New Instructor Training	
		In-Service	
		Resources	The new instructor training was very helpful.
		Online Training	
		All Training Aspects*	
Instructor-Assisted	35.8%	Partnerships	Student engagement and instructor support from other instructors.
		Classroom Management	The observations and guidance from veteran instructors had biggest influence.
		All Training Aspects*	
Personal Contributions	14.5%	Personal Initiatives	Communication and asking question to other instructors.
		Asking Questions	
		Prior Knowledge	I have figured it out myself.
		All Training Aspects*	
Lack of Training	12.2%	Little to No Training	Very little training.
		Nothing	There has not been any instructor training, I went to new instructor orientation a year after starting.

*Note: The code "All Training Aspects" was identified as contributing to the theme of "TCAT Training," "Instructor-Assisted," and "Personal Contributions" and contributed 2.5% of each themes frequency percentage.

**Note: 111 open-ended comments were coded with some statements being coded more than once based on detail of responses. 167 total coding occurrences.

Regarding RQ1, the final open-ended question asked participants what additional comments they would like to add regarding TCAT training (Table 20). Specific to RQ1, participants identified general training needs, such as having various training opportunities throughout their tenure at TCAT, being offered time to train, given the autonomy to seek out training experiences and train on their own through conferences and webinars, having training upon hire and within their tenure at TCAT organized and communicated, offering training resources, and routine check-ins by administration with instructors regarding training needs and opportunities. In addition, participants suggested specific training ideas that may help instructors further their own professional development. And while many participants gave additional comments regarding instructor training, 19.8% of participants indicated they had no further comments to add.

Research Question 2. The second research question (RQ2) sought to identify what professional development and/or resources are needed by TCAT instructors. There were eight closed-ended statements corresponding to RQ2: I received an employee handbook, I was trained on how to develop a lesson plan, I partnered with at least one other TCAT faculty member to improve my ability as an instructor, I was assigned a TCAT faculty member who would serve as a mentor to me, I read through my employee handbook in its entirety, I was given time to review teaching best practices before instructing my students, I was taught specific classroom management skills, and I partnered with other instructors at TCAT to learn different teaching styles (Table 21).

Table 20.*RQ1: Qualitative Responses: Additional Comments*

Theme	Percentage of Theme	Frequency Percentage	Sample Quotes
General Training	42.0%	Training Opportunities	Need monthly meetings with office to address issues.
		No Training Offered	Instructors feel powerless regarding certain kinds of disciplinary processes. Allow more final decisions to the instructor instead of the current 'override' doctrine that is extant.
		Time to Train	
		Autonomy	
		Training Organization	The main concern that I have is that training is not offered frequently enough throughout the year. I started my career as an instructor just after the training was offered). Therefore, I had to wait almost a year for the training to come back around.
		Resources	
		Check-Ins	
Specific Training	22.2%	Mentor Program	Each TCAT needs to have a mentor program and new instructor training.
		Topic training	
		Institution Knowledge	
		Employee Handbook	Additional training on purchasing policies.
		Purchasing	Instructors should be given an employee handbook that details information - how to complete forms, handle discipline, etc.
None	19.8%	Nothing	Nothing. Nothing else to share.

*Note: 16.0% of responses were not applicable to the statement participants were asked to answer and were not included in Table 20.

**Note: 101 open-ended comments were coded with some statements being coded more than once based on detail of responses. 150 total coding occurrences.

Table 21.*RQ2: Instructor Responses: Strongly Agree — Agree*

Statement	Percentage Strongly Agree-Agree
I received an employee handbook.	77.8%
I was trained on how to develop a lesson plan.	26.1%
I partnered with at least one other TCAT faculty member to improve my ability as an instructor.	62.7%
I was assigned a TCAT faculty member who would serve as a mentor to me.	34.6%
I read through my employee handbook in its entirety.	56.9%
I was given time to review teaching best practices before instructing my students.	27.5%
I was taught specific classroom management skills.	27.5%
I partnered with other instructors at TCAT to learn different teaching styles.	50.3%

Most participants indicated that while they did receive an employee handbook, a little more than half read through their entire handbook. In addition, over 50% of respondents indicated they did partner with other instructors to improve their ability as an instructor as well as to learn different teaching styles. However, low levels of agreement were reported regarding training on developing a lesson plan, having a TCAT faculty mentor, having time to review teaching best practices, and learning classroom management skills. Thus, indicating a lack of training to adequately prepare instructors to teach within their classrooms upon initial hire.

To further assess RQ2, statements were analyzed to identify the mean of each statement based on Holland Code (Table 22). Analysis based on Holland Code identified similar findings to that of overall responses to the close-ended questions (Table 21). As indicated by Table 22, mean scores based on Holland Code for each quantitative statement in RQ2 ranged from 1.7-4.1 on a 5-point Likert scale; thus, indicating overall levels of agreement with each statement based on Holland Code showed low levels of agreement overall. However, the statements regarding the TCAT employee handbook (“I received an employee handbook” and “I read through my

employee handbook in its entirety”) received higher levels of agreement ranging from 3.0-4.1. Due to the low response rates for the Holland Codes of Artistic (1), Enterprising (3), and Investigative (4), all codes except for Realistic (5) were condensed into one variable, resulting in two different groups: Realistic and Non-Realistic.

After the mean scores were assessed, several independent *t*-tests were conducted to identify whether there were any significant differences in mean responses to the statement of RQ2 based on the participant’s Holland Code (Gravetter & Wallnau, 2017). In order to correct for a Type I error, a Bonferroni Correction was made to the alpha levels within each independent *t*-tests, resulting in an alpha level where $p \leq .006$ (Weisstein, 2019). Regarding each of the RQ2 statements, the independent *t*-tests indicated that there were no significant differences in mean responses between the groups based on the Holland Code.

To further analyze the levels of agreement surrounding RQ2, gender (male, female) and ethnicity (white, non-white) were examined by running two separate independent *t*-tests (Table 23 and 24). The *t*-test based on gender indicated similar levels of agreement within the following statements: “I received an employee handbook,” “I partnered with at least one other TCAT faculty member to improve my ability as an instructor,” and “I read through my employee handbook in its entirety.” For all other statements, there were clear differences within levels of agreement based on gender (Table 23).

Female participants reported a 32.1% level of agreement regarding receiving training on lesson plan development, which was 17.8% higher than the level of agreement reported by male respondents. Female respondents reported 10.9% higher levels of agreement over male respondents regarding being assigned a TCAT faculty member who served as their mentor. Similarly, females reported 8.9% higher levels of agreement regarding partnering with other

Table 22.*RQ2: Instructor Responses: Mean Scores and Standard Deviations Based on Holland Codes*

Statement	Mean Scores and Standard Deviations							
	Holland Code							All Participants
	Mean and SD	A (N=5)	C (N=9)	E (N=3)	I (N=1)	R (N=59)	S (N=16)	
I received an employee handbook.	Mean	3.4	4.1	3.3	4.0	3.9	4.1	3.9
	SD	1.52	1.36	1.15	n/a	1.19	1.36	1.27
I was trained on how to develop a lesson plan.	Mean	2.0	2.1	1.7	2.0	2.9	2.4	2.7
	SD	1.22	1.05	1.15	n/a	1.32	1.31	1.34
I partnered with at least one other TCAT faculty member to improve my ability as an instructor.	Mean	2.8	4.1	2.0	2.0	3.6	3.4	3.5
	SD	1.30	1.36	1.73	n/a	1.43	1.67	1.42
I was assigned a TCAT faculty member who would serve as a mentor to me.	Mean	3.4	2.3	1.7	2.0	3.1	2.7	2.8
	SD	1.34	1.58	1.15	n/a	1.38	1.57	1.41
I read through my employee handbook in its entirety.	Mean	3.8	3.4	3.0	4.0	3.5	3.8	3.6
	SD	0.45	1.01	1.73	n/a	1.15	1.45	1.29
I was given time to review teaching best practices before instructing my students.	Mean	1.8	3.0	3.0	2.0	2.7	2.7	2.6
	SD	0.84	1.41	2.00	n/a	1.22	1.25	1.31

Table 22. Continued.*RQ2: Instructor Responses: Mean Scores and Standard Deviations Based on Holland Codes*

Statement	Mean Scores and Standard Deviations							All Participants
	Holland Code							
	Mean and SD	A (N=5)	C (N=9)	E (N=3)	I (N=1)	R (N=59)	S (N=16)	
I was taught specific classroom management skills.	Mean	1.8	2.3	2.0	2.0	2.9	2.8	2.7
	SD	0.84	1.22	1.00	n/a	1.15	1.37	1.27
I partnered with other instructors at TCAT to learn different teaching styles.	Mean	3.6	3.9	3.0	2.0	3.3	2.9	3.2
	SD	1.14	1.05	1.73	n/a	1.23	1.45	1.27

*Note: Rating scale for each statement/question: Strongly Disagree (1), Disagree (2), Neither Agree nor Disagree (3), Agree (4), Strongly Agree (5), Missing (6).

**Note: Holland Codes: Artistic (A), Conventional (C), Enterprising (E), Investigative (I), Realistic (R), Social (S).

TCAT instructors to learn different teaching styles. More substantial differences occurred when female respondents had 20.2% higher levels of agreement than males regarding having time to review teaching best practices prior to instructing their students. Lastly, the largest difference was identified when female respondents had 21.3% higher levels of agreement concerning being taught classroom management skills.

The independent *t*-test identified that based on gender, that females had a statistically significant higher level of agreement regarding the statement “I was trained on how to develop a lesson plan” and “I was given time to review teaching best practices before instructing my students.”

To identify the size of the difference for both statements identified as significant based on the results of the *t*-test, Cohen’s *D* was calculated. For the statement “I was trained on how to

Table 23.*RQ2: Agreement Frequencies Based on Gender*

Statement	Male (n = 25) Percentage Agree- Strongly Agree	Male Mean and Standard Deviations	Female (n = 81) Percentage Agree- Strongly Agree	Female Mean and Standard Deviations
I received an employee handbook.	80.9%	Mean 3.95	75.3%	Mean 3.89
		SD 1.07		SD 1.36
I was trained on how to develop a lesson plan.	14.3%	Mean 1.95	32.1%	Mean 2.82
		SD 1.02		SD 1.35
I partnered with at least one other TCAT faculty member to improve my ability as an instructor.	61.9%	Mean 3.28	60.5%	Mean 3.45
		SD 1.55		SD 1.46
I was assigned a TCAT faculty member who would serve as a mentor to me.	28.6%	Mean 2.57	39.5%	Mean 2.93
		SD 1.53		SD 1.40
I read through my employee handbook in its entirety.	57.1%	Mean 3.47	58.0%	Mean 3.66
		SD 1.12		SD 1.33
I was given time to review teaching best practices before instructing my students.	14.3%	Mean 2.14	34.5%	Mean 2.84
		SD 1.06		SD 1.31
I was taught specific classroom management skills.	9.6%	Mean 2.27	30.9%	Mean 2.83
		SD 1.04		SD 1.29
I partnered with other instructors at TCAT to learn different teaching styles.	38.0%	Mean 3.04	46.9%	Mean 3.13
		SD 1.59		SD 1.23

**Note:* 47 participants did not identify their gender, so these data were not included in agreement frequency percentage based on gender.

before instructing my students,” Cohen’s D equaled 0.833, also identifying a large effect size

develop a lesson plan” Cohen’s *D* was reported as 1.028. Thus, indicating a large effect size between genders. Regarding the statement “I was given time to review teaching best practices between gender.

An independent *t*-test was then conducted for ethnicity (Table 24). For each statement, White respondents had higher levels of agreement than that of Non-White respondents. Similar, less than 5% difference, ratings were shown between ethnicities for the statements “I received an employee handbook” and “I partnered with other instructors at TCAT to learn different teaching styles.” Further analysis identified larger differences based on ethnicity, specifically in comparing the statement of “I partnered with at least one other TCAT faculty member to improve my ability as an instructor” where White respondents had a 26.1% higher level of agreement than Non-White participants. Additionally, White respondents had a 16.4% higher level of agreement regarding “I read through my employee handbook in its entirety.” The largest difference based on ethnicity identified a 16.5% higher level of agreement by White respondents regarding the statement “I was given time to review teaching best practices before instructing my student.” Further examination within the *t*-test, identified two statistically significant differences based on ethnicity.

The statement “I partnered with at least one other TCAT faculty member to improve my ability as an instructor” was found to be statistically significant with a Cohen’s *D* value of 0.799. Thus, indicating a large effect size between White and Non-White participants. Similarly, the statement of “I was taught specific classroom management skills” was found to be statistically significant with a Cohen’s *D* of 0.771, which also indicated a strong effect size between different ethnicities.

Table 24.*RQ2: Agreement Frequencies Based on Ethnicity*

Statement	White (n = 95) Percentage Agree- Strongly Agree	White Mean and Standard Deviations	Non-White (n =24) Percentage Agree- Strongly Agree	Non-White Mean and Standard Deviations
I received an employee handbook.	77.9%	Mean 3.94	73.9%	Mean 4.00
		SD 1.27		SD 1.24
I was trained on how to develop a lesson plan.	29.5%	Mean 2.69	17.3%	Mean 2.39
		SD 1.37		SD 1.40
I partnered with at least one other TCAT faculty member to improve my ability as an instructor.	65.2%	Mean 3.57	39.1%	Mean 2.78
		SD 1.46		SD 1.50
I was assigned a TCAT faculty member who would serve as a mentor to me.	37.9%	Mean 2.89	26.0%	Mean 2.42
		SD 1.42		SD 1.47
I read through my employee handbook in its entirety.	64.2%	Mean 3.75	47.8%	Mean 3.28
		SD 1.15		SD 1.42
I was given time to review teaching best practices before instructing my students.	29.5%	Mean 2.66	13.0%	Mean 2.17
		SD 1.31		SD 1.26
I was taught specific classroom management skills.*	27.4%	Mean 2.82	17.3%	Mean 2.17
		SD 1.29		SD 1.26
I partnered with other instructors at TCAT to learn different teaching styles.	48.4%	Mean 3.27	43.5%	Mean 2.74
		SD 1.26		SD 1.42

There were five open-ended statements/questions that corresponded with RQ2: What aspects of your instructor training when you started your career at TCAT could have been improved in order to make you a successful instructor? Since you have been a faculty member at TCAT, What other types of instructor training have you received while employed at TCAT? What aspects of the instructor training at TCAT could be improved upon for instructors? What specific training activities/lessons do you wish you had received when you began your career at TCAT? and What else would you like to share about the instructor training at TCAT? (Table 25-29).

Regarding RQ2, to identify professional development and/or resources need by instructors, the open-ended comments regarding helpful training received was analyzed (Table 25). Almost half of the statements coded exhibited that successful training received consisted of instructor-assisted training. This theme included sub-themes of partnerships with other instructors, learning classroom management skills from seasoned TCAT instructors, and all aspects of training offered with particular focus on working with and learning from other instructors made study participants better prepared to begin their career at TCAT. Furthermore, 18.1% of respondents stated that their own personal contributions made them successful as they began their career at TCAT. Lastly, 13.0% of respondents identified that TCAT training, such as a new instructor orientation, new instructor training, in-service sessions, TCAT resources, online training, and all other aspects of training helped them prepare to instruct their students. It should be noted that 19.7% of respondents indicated they received no training. Therefore, to answer RQ2, attention to the themes and sub-themes identified as the most helpful, would also be useful in answering specific concepts that are needed for new TCAT instructors.

Table 25.*RQ2: Qualitative Responses: Most Helpful Training Received*

Theme	Percentage of Theme	Sub-Theme	Sample Quotes
Instructor-Assisted	49.2%	Partnerships	Student engagement and instructor support from other instructors.
		Classroom Management	
		All Training Aspects*	The observations and guidance from veteran instructors had biggest influence.
Lack of Training	19.7%	Little to No Training	Very little training.
		Nothing	There has not been any instructor training, I went to new instructor orientation a year after starting.
Personal Contributions	18.1%	Personal Initiatives	Communication and asking question to other instructors.
		Asking Questions	
		Prior Knowledge	I have figured it out myself.
		All Training Aspects*	
TCAT Training	13.0%	Orientation	Nothing when I started; however, with in-service and meeting fellow state-wide instructors did I receive helpful information.
		New Instructor Training	
		In-Service	
		Resources	
		Online Training	The new instructor training was very helpful.
		All Training Aspects*	

*Note: The code “All Training Aspects” was identified as contributing to the theme of “TCAT Training,”

“Instructor-Assisted,” and “Personal Contributions” and contributed 2.5% of each themes frequency percentage.

**Note: 115 open-ended comments were coded with some statements being coded more than once based on detail of responses. There were 122 total coding occurrences.

In continuing to assess RQ2, respondents were asked to identify other training they had received at TCAT (Table 26). The theme of “Teaching” included eight different sub-themes including: classroom management, teaching strategies, lesson planning, grading, topic training, attendance, curriculum development, and student issues. 48.7% of participants indicated these subthemes to be essential to their professional development as a successful instructor. The theme of “Procedural” was identified within 21.3% of responses. This included sub-themes of policies and procedures, time management, budgets, recording keeping, purchasing, and paperwork. Each of these sub-themes specifically detailed training that focused on administrative aspects that were outside of the classroom that aided in instructors feeling more prepared to instruct their students. Generalized Training was the third theme identified by 19.3% of the sub-themes within the data.

To further answer RQ2, respondents were asked to identify the training they wished they had received when they were hired with TCAT and before they began instructing their students (Table 27). The theme of “TCAT Training” was identified as including six different sub-themes: orientation, new instructor training, in-service, resources, online training, and all training aspects. The theme of “Instructor-Assisted” was identified within the respondent data and included subthemes focusing on partnerships with current TCAT instructors, training on classroom management, and all training aspects. “Personal Contributions” was the third theme assessed where respondents indicated that their own personal initiatives to learn, asking questions, utilizing their own prior knowledge, in addition to the reoccurring sub-theme of “all training aspects” was needed to improve instructor training at TCAT. Lastly, respondents indicated a lack of training, in that, they received little to no training and as such, they gave further suggestions

Table 26.*RQ2: Qualitative Responses: Other Training Received at TCAT*

Theme	Percentage of Theme	Sub-Theme	Sample Quotes
Teaching	48.7%	Attendance	I received specialized training to certify me as instructor for low-voltage copper cabling and for fiber optic cabling.
		Classroom Management	
		Curriculum Development	Industry training.
		Grading	PN Coordinator's Meeting twice a year.
		Lesson Planning	
		Student Issues	Workshops and online seminars.
		Teaching Strategies	
		Topic Training	
Procedural	21.3%	Budgets	Sexual Harassment training.
		Paperwork	COE, OSHA, CPR Instructor, Everfi, Title VI and IX, Campus Safety.
		Policies and Procedures	
		Purchasing	
		Record Keeping	I was able to get my CPR Instructor certification.
		Time Management	
Generalized Training	19.3%	Mentor	I have received Banner Training.
		Basic Concepts	In-service and national train-the-trainer occupational instructions.
		In-Service	
		Instructor Expectations	Monthly staff meetings.
		Recruitment	
		Train the Trainer	Banner training, Sims training, in house staff meetings.
		Organization	
		Technology	
		Orientation	Conferences and seminars.
		Resources	
None	4.0%	None	None that I haven't sought myself from other instructors and staff members. None

*Note: 6.7% of responses were not applicable to the statement participants were asked to answer and were not included in Table 26.

**Note: 115 open-ended comments were coded with some statements being coded more than once based on detail of responses. There were 150 total coding occurrences.

Table 27.*RQ2: Qualitative Responses: Training Desired Upon Initial Hire*

Theme	Percentage of Theme	Sub-Theme	Sample Quotes
TCAT Training	37.5%	Orientation	Nothing when I started; however, with in-service and meeting fellow state-wide instructors did I receive helpful information.
		New Instructor Training	
		In-Service	
		Resources	
		Online Training	The new instructor training was very helpful.
		All Training Aspects*	
Instructor-Assisted	35.8%	Partnerships	Student engagement and instructor support from other instructors.
		Classroom Management	The observations and guidance from veteran instructors had biggest influence.
		All Training Aspects*	
Personal Contributions	14.5%	Personal Initiatives	Communication and asking question to other instructors.
		Asking Questions	I have figured it out myself.
		Prior Knowledge	
		All Training Aspects*	
Lack of Training	12.2%	Little to No Training	Very little training.
		Nothing	There has not been any instructor training, I went to new instructor orientation a year after starting.

*Note: The sub-theme of “All Training Aspects” pertained to all themes within the data except Lack of Training.

**Note: 111 open-ended comments were coded with some statements being coded more than once based on detail of responses. 167 total coding occurrences.

mentioned in aforementioned themes and sub-themes that had a higher occurrence within the data.

The final open-ended statement utilized to answer RQ2 asked participants if they had any additional comments regarding instructor training (Table 28). The theme of “General Training” was identified with various sub-themes that focused on increased training opportunities, awareness of the lack of training offered to many new instructors, being given time to train prior to instructing students, having autonomy within training to find what best suits the needs of the new instructor, available resources, and periodic check-ins by supervisors or administration regarding training. “Specific Training” was the second most occurring theme, which included sub-themes that identify the following as professional development resources needed for success: a mentor program for new instructors, topic training, training on institutional knowledge, ensuring that all new instructors receive a new employee handbook, and directives on purchasing. Lastly, 19.8% of respondents stated that they had no addition comments or suggestions to share.

Research Question 3. The third research question (RQ3) sought to identify what types of pedagogies/activities are used most by TCAT instructors. There were two closed-ended statements corresponding to RQ3: I gained a clear understanding of how to motivate my students, and I learned how to teach to students with different learning styles. Based on responses received for RQ3, it was identified that approximately half of the participants within the current study gained an understanding of how to motivate their students, as well as how to teach students with different learning styles (Table 29). To further assess RQ3, statements were analyzed to identify the mean score of each statement based on Holland Codes (Table 30).

Table 28.*RQ2: Qualitative Responses: Additional Comments*

Theme	Percentage of Theme	Sub-Theme	Sample Quotes
General Training	42.0%	Training Opportunities	Instructors feel powerless regarding certain kinds of disciplinary processes. Allow more final decisions to the instructor instead of the current 'override' doctrine that is extant.
		No Training Offered	The main concern that I have is that training is not offered frequently enough throughout the year. I started my career as an instructor just after the training was offered). Therefore, I had to wait almost a year for the training to come back around.
		Time to Train	
		Training Organization	
		Resources	
		Check-Ins	
Specific Training	22.2%	Mentor Program	Instructors should be given an employee handbook that details information - how to complete forms, handle discipline, etc.
		Topic Training	Each TCAT needs to have a mentor program and new instructor training.
		Institution Knowledge	
		Employee Handbook	
		Purchasing	Additional training on purchasing policies.
Nothing	19.8%	Nothing	Nothing. Nothing else to share.

*Note: 16.0% of responses were not applicable to the statement participants were asked to answer and were not included in Table 28.

**Note: 101 open-ended comments were coded with some statements being coded more than once based on detail of responses. 150 total coding occurrences.

Table 29.*RQ3: Instructor Responses: Strongly Agree – Agree*

Statement	Percentage Strongly Agree-Agree
I gained a clear understanding of how to motivate my students.	45.7%
I learned how to teach to students with different learning styles.	55.5%

Table 30.*RQ3: Instructor Responses: Mean Scores and Standard Deviations Based on Holland Codes*

Statement	Mean Score and Standard Deviations							All Participants
		Holland Code						
	Mean and SD	A (N=5)	C (N=9)	E (N=3)	I (N=1)	R (N=59)	S (N=16)	
I gained a clear understanding of how to motivate my students.	Mean	2.8	2.8	2.0	2.0	3.2	3.1	3.1
	SD	1.09	1.30	1.73	n/a	1.25	1.24	1.22
I learned how to teach to students with different learning styles.	Mean	3.2	2.7	2.3	2.0	3.5	3.3	3.3
	SD	1.48	1.22	1.53	n/a	1.21	1.30	1.23

*Note: Rating scale for each statement/question: Strongly Disagree (1), Disagree (2), Neither Agree nor Disagree (3), Agree (4), Strongly Agree (5), Missing (6).

**Note: Holland Codes: Artistic (A), Conventional (C), Enterprising (E), Investigative (I), Realistic (R), Social (S).

As indicated by Table 30, mean scores based on Holland Code for each quantitative statement in RQ3 ranged from 2.0-3.5 on a 5-point Likert scale, with the participants in the Holland Code, Realistic (5) having the highest levels of agreement for each RQ3 statement. By analyzing the closed-ended mean scores based on Holland Codes, it was identified for the first closed-ended statement while the Holland Codes of Artistic (1), Conventional (2), Realistic (5) and Social (6) were similar to the overall mean score of 3.1, Holland Codes Enterprising (3), and

Investigative (4) had a mean score of 2.0. Thus, indicating that participants from programs that were identified within these two Holland Codes indicated lower levels of agreement than the other four Holland Codes. Similarly, for the second closed-ended statement, the Holland Codes of both Enterprising (3) and Investigative (4) rated lower levels of agreement of 2.3 and 2.0 versus the overall mean of 3.3. Therefore, demonstrating that for programs within both these Holland Codes had fewer participants who indicated an understanding of motivating their students or learning how to teach students with different learning styles. Due to the low response rates for the Holland Codes of Artistic (1), Enterprising (3), and Investigative (4), all codes except for Realistic (5) were condensed into one group, resulting in two different groups: Realistic and Non-Realistic.

After the mean scores were assessed, several independent *t*-tests tests were conducted to identify whether there were any significant differences in mean responses to the statement of RQ3 based on the participant's Holland Code (Gravetter & Wallnau, 2017). In order to correct for a Type I error, a Bonferroni Correction was made to the alpha levels within each independent *t*-tests, resulting in an alpha level where $p \leq .025$ (Weisstein, 2019). Regarding each of the RQ3 statements, the independent *t*-tests indicated that there were no significant differences in mean responses between the groups based on the Holland Code.

To further analyze the levels of agreement surrounding RQ3, two separate independent *t*-tests were conducted based on gender (male, female) and based on ethnicity (white, non-white) (Tables 31 and 32). Males reported slightly higher levels of agreement for both closed-ended statement; however, based on the analysis, there was no significant difference identified between

Table 31.*RQ3: Agreement Frequencies Based on Gender*

Statement	Male (n = 25) Percentage Agree- Strongly Agree	Male Mean and Standard Deviations	Female (n = 81) Percentage Agree- Strongly Agree	Female Mean and Standard Deviations
I gained a clear understanding of how to motivate my students.	45.7%	Mean 2.90	38.1%	Mean 3.12
		SD 1.22		SD 1.21
I learned how to teach to students with different learning styles.	56.8%	Mean 3.19	47.6%	Mean 3.37
		SD 1.36		SD 1.23

**Note:* 47 participants did not identify their gender, so these data were not included in agreement frequency percentage based on gender.

Table 32.*RQ3: Agreement Frequencies Based on Ethnicity*

Statement	White (n = 95) Percentage Agree- Strongly Agree	White Mean and Standard Deviations	Non-White (n = 24) Percentage Agree- Strongly Agree	Non-White Mean and Standard Deviations
I gained a clear understanding of how to motivate my students.	42.1%	Mean 3.08	52.2%	Mean 3.00
		SD 1.26		SD 1.51
I learned how to teach to students with different learning styles.	55.8%	Mean 3.32	43.5%	Mean 3.04
		SD 1.27		SD 1.36

**Note:* 47 participants did not identify their gender, so these data were not included in agreement frequency percentage based on gender.

groups. Therefore, there was no association of mean scores for either closed-ended statement based on gender.

A second independent *t*-test was conducted to identify if there was significant relationship between ethnicity (White, Non-White) and closed-ended statement (Table 32). Non-White participants indicated a 10.1% higher level of agreement that they gained a clear understanding of how to motivate their students. In contrast, 12.3% more White participants than Non-White participants agreed that they learned how to teach student with difference learning styles. However, based on the independent *t*-test, there was no significant difference identified between groups, $p > .05$. Therefore, there was no association of mean scores for either closed-ended statement based on ethnicity.

There were two open-ended statements/questions that corresponded with RQ3: What specific training activities/lessons do you wish you had received when you began your career at TCAT? and What else would you like to share about the instructor training at TCAT? (Table 33-34). Four themes were identified based on participants responses regarding the training they wish they had received: Teaching, Procedural, and Generalized Training. Among these four themes, various sub-themes were detected that further explained the need for training regarding various aspects of teaching, such as developing a curriculum, dealing with student issues, and grading. In addition, the theme of Procedural included sub-themes that dealt specifically with administrative duties that instructors wanted to learn more about or learn how to do, such as dealing with their allotted budget, handling paperwork, TCAT policies and procedures, etc.

The third theme of Generalized Training focused on sub-themes that every TCAT instructor should understand, regardless of program, role, or TCAT location. In addition, the sub-themes were identified as items that should occur outside of the instructor's teaching role. Some

Table 33.*RQ3: Qualitative Responses: Training Wish Received*

Theme	Percentage of Theme	Sub-Theme	Sample Quotes
Teaching	51.2%	Attendance	I received specialized training to certify me as instructor for low-voltage copper cabling and for fiber optic cabling.
		Classroom Management	
		Curriculum Development	Industry training.
		Grading	PN Coordinator's Meeting twice a year.
		Lesson Planning	
		Student Issues	Workshops and online seminars.
		Teaching Strategies	
		Topic Training	
Procedural	22.6%	Benefits	Sexual Harassment training.
		Budgets	
		Paperwork	COE, OSHA, CPR Instructor, Everfi, Title VI and IX, Campus Safety.
		Policies and Procedures	
		Purchasing	
Generalized Training	20.9%	Record Keeping	I have received Banner Training.
		Time Management	In-service and national train-the-trainer occupational instructions.
		Mentor	
		Basic Concepts	Monthly staff meetings.
		In-Service	
		Instructor Expectations	Banner training, Sims training, in house staff meetings.
		Recruitment	
		Train the Trainer	Conference and seminars.
		Organization	
		Resources	
None	4.0%	None	None that I haven't sought myself from other instructors and staff members.
			None.

*Note: 1.3% of responses were not applicable to the statement participants were asked to answer and were not included in Table 33.

**Note: 115 open-ended comments were coded with some statements being coded more than once based on detail of responses. There were 150 total coding occurrences.

sub-themes included: basic concepts, organizational skills, learning technology (i.e., computer software and systems), and know the resources available at TCAT. Lastly, the theme of None was identified regarding training respondents wish they had received.

In order to further understand the training and professional development most utilized by TCAT instructors, analysis of responses regarding open-ended additional comments was completed (Table 34). Three themes were identified: General Training, Specific Training, and Nothing. In relation to training most used, the data within the three main themes identified subthemes such as employee handbook, resources, check-ins, and purchasing.

Summary of Results

Using the data from study one, a survey was developed that utilized both closed and open-ended statements/questions to further identify TCAT instructor professional development needs. Instructors from various TCAT locations participated in the current study, resulting in a clearer understanding of instructor perceptions of training at TCAT and the strengths and weaknesses of the training offered (RQ1). It was identified that TCAT instructor training is lacking crucial elements that may contribute to the success of new and experienced TCAT instructors. More specifically, only half of instructors received the tools they needed to be successful within their classroom. This finding was consistent based on gender, ethnicity, and the participant's program Holland Code. Furthermore, respondents made it evident that training upon initial hire is crucial to the success of TCAT instructors. While there were weaknesses within training, such as a lack of training, respondents gave insightful suggestions as to how to improve training for new TCAT instructors. Mentoring by senior instructors was identified as a huge training opportunity as respondents identified these partnerships as a key pathway to learning various teaching techniques and administrative tasks.

Table 34.*RQ3: Qualitative Responses: Additional Comments*

Theme	Percentage of Theme	Sub-Theme	Sample Quotes
General Training	42.0%	Training Opportunities	I have been here for several years now and can honestly say that I have had to figure most things out on my own.
		No Training Offered	
		Time to Train	
		Autonomy	Instructor training is unique and beneficial. While it was helpful (the online training) it was hard to complete even though I had already been teaching for almost a year.
		Resources	
		Training Organization	
		Check-ins	
Specific Training	22.2%	Mentor Program	It can be difficult to adjust to the classroom environment. I had a lot of confidence in my skills in my profession, but I had a lot to learn about being an educator.
		Topic Training	
		Instructor Knowledge	
		Employee Handbook	Each TCAT needs to have a mentor program and new instructor training.
		Purchasing	
Nothing	19.8%	Nothing	Nothing. Nothing else to share.

*Note: 16.0% of responses were not applicable to the statement participants were asked to answer and were not included in Table 34.

**Note: 101 open-ended comments were coded with some statements being coded more than once based on detail of responses. 150 total coding occurrences.

Respondents expanded further on resources and professional development needed by TCAT instructors within their responses to RQ2. No significant differences between Holland Code, gender, or ethnicity were identified, it was apparent that instructors all agreed that training on developing a lesson plan, having a mentor, learning teaching best practices, and receiving and understanding the employee handbook are essential to instructor success. Additionally, respondents added that professional development must continue throughout their time at TCAT. Respondents identified training focused on classroom management, partnerships, resolving questions, providing resources, in-service annual sessions, and possible online training are essential to further the professional development and training of current TCAT instructors.

Teaching pedagogies most often utilized by TCAT instructors were also identified throughout the current study (RQ3). It was evident that pedagogies utilized only allotted for approximately half of the respondents to motivate their students and teach those with different learning styles. While this statement focused on pedagogies utilized, it evolved into one of training they wish they had received. This included industry training, workshops, online seminars, classroom management, curriculum development, lesson planning, administrative tasks, teaching strategies, and technology training. While RQ3 sought to identify current teaching pedagogies utilized, it was apparent from responses collected that respondents were more focused on the training they needed to improve their teaching pedagogy. Their suggestions and additional comments aligned directly to those asked within RQ1 and RQ2. Thus, identifying that while half of the respondents received various aspects of training, suggestions for an organized and mandatory training are desired for new and more experienced TCAT instructors. While an assortment of responses was collected throughout the data, it was clear that there was a crucial need for the continued professional development of TCAT instructors.

Chapter 5

Discussion and Limitations of Findings

Introduction

The purpose of the current study sought to assess TCAT instructor training needs and satisfaction by assessing the data collected to address the study's main research questions. It also sought to identify specific training needs of TCAT instructors at the start of their teaching career at TCAT, as well as ongoing training throughout their tenure at TCAT. Data were collected through an online survey with both closed and open-ended questions, which allowed for more comprehensive responses surrounding the purpose of the study. Statements and questions regarding training strengths, weaknesses, and suggestions for improvement were examined to answer the three study research questions.

Findings

Research Question 1 (RQ1). To address research question one, four quantitative statements/questions and six qualitative statements/questions were analyzed. Because RQ1 had two sub-questions (RQ1a, RQ1b), the same qualitative and quantitative statements/questions were analyzed to address each aspect of RQ1. Descriptive statistical analyses were conducted, which identified overall mean levels of agreement regarding the explanation of policies and procedures (student and instructor), how to deal with difficult/disruptive students, and receiving needed classroom supplies.

As shown in Table 8, for each statement, the levels of agreement ranged from 40.5% in agreement to 54.2% in agreement. While approximately half of the respondents agreed or strongly agreed with three of the four statements, only 40% of the participants indicated they agreed or strongly agreed with the statement, "All instructor policies were clearly explained to

me.” Thus, 60% of participants upon initial hire or during their tenure at TCAT did not and/or may not understand the instructor policies. This lack of understanding can negatively affect teaching practices, instructor competency, instructor retention, and ultimately, student success (Bouguen, 2016; Kelly, 2019).

According to the TCAT-Knoxville instructor handbook (2017), these policies would include topics such as mission, purpose, and objectives; employee benefits, student policies, campus rules and regulations (e.g., smoking, drugs, etc.); types and methods of instruction; student evaluation procedures; and human resources information. These data tie in with that of the qualitative themes that were identified in Table 14 regarding improvements that could be made. The majority of qualitative responses focused on TCAT training, specifically offering an orientation session, new instructor training, resources, and online training for all new employees. Further suggestions included creating partnerships with senior instructors, resources on classroom management, and the ability to ask questions.

To further examine the data from RQ1, several independent *t*-tests were conducted. Within the independent *t*-tests, the Holland Codes were collapsed into two categories: Realistic ($n = 59$) and all other codes ($n = 34$) to compare the means of participants working in programs within the Realistic Holland Code versus all other Holland Codes to identify whether there was a significant difference between the population means.³ Among all RQ1 Likert items, no significant differences were found between the group means on any of the statements, based on Holland Codes (Tabachnick & Fidell, 2013).

³ It should be noted that among all programs offered within various TCAT locations, programs with the Holland Code of Realistic make up 61.7% of all programs. All other Holland Codes have between 2.6%-11.1% occurrence, which combined are still represented within less than 50% of all programs among TCAT locations.

To further assess possible differences in responses, levels of participant agreement for each RQ1 quantitative statement were analyzed based on gender (male or female) and ethnicity (white or non-white). As shown in Table 11, similar levels of agreement were found between male and female participant responses for “I received all the supplies I would need to successfully teach my students” and “I learned how to deal with difficult/disruptive students.” However, in analyzing levels of agreement surrounding the explanation of student and instructor policies, there was a clear difference between males and females. Only 12.0% of males reported levels of agreement versus 40.9% of females in agreement in response to understanding instructor policies. Additionally, when asked if student policies were clearly explained, males only 28.0% of males agreed, whereas 47.3% of females agreed. While clear differences were found in level of agreement based on gender, an independent *t*-test found that there were no significant differences between the mean scores of each statement based on gender.

By examining and understanding the differences in levels of agreement based on gender, it is evident that further explanations of policies are needed to help instructors, both male and female, achieve success within their classrooms. By understanding the policies and procedures, TCAT instructors would have the knowledge to run their classroom effectively, deal with student issues, successfully complete administrative tasks, and complete various other duties that may hinder their success in teaching their students (Perkins-Gough, 2003; Gournea, 2005; Kelly, 2019).

However, there were differences in level of agreement among ethnic subgroups. Non-White participants indicated only 29.1% levels of agreement regarding receiving the supplies they need to successfully teach their students. Non-White participants also had lower levels of agreement in understanding instructor policies (25.0% in agreement) and understanding student

policies (29.2% in agreement). While White participants rated higher levels of agreement regarding understanding student and instructor policies, only 35.5% indicated that they agreed that instructor policies were clearly explained. Responses revealed a lack of understanding surrounding policies; instructors do not have the tools they need to be successful; and they do not know how to deal with difficult/disruptive students. This lack of support and/or understanding can lead to frustration and a lack of ability to teach their students successfully. By analyzing agreement for all participants based on gender and ethnicity, a clearer picture of the need for further training is evident. Furthermore, the independent *t*-test conducted on ethnicity indicated significant differences, with large effect sizes, among two quantitative responses: “I received all the supplies I would need to successfully teach my students” and “All student policies were clearly explained to me.”

While the quantitative items showed that participants reported low to moderate levels of agreement with each statement, further analysis utilizing the qualitative item responses was conducted to gain a clearer understanding of RQ1, RQ1a, and RQ1b. Utilizing an axial coding method (Merriam & Tisdell, 2016; Strauss & Corbin, 2008), the themes identified in Tables 10-15 gave a clearer picture of training needs, training received, and training strengths and weaknesses. For example, Table 10 identified that Partnerships, Required Training, and Classroom Training were some of the key areas of training that new instructors received at TCAT. However, themes similar and/or identical to these (TCAT Training, Instructor-Assisted) were identified as areas for further improvement. Additional themes from the assessment of data for RQ1 showed that participants who partnered with and/or observed mentors or other instructors found their training to be more successful. These findings align with those of Hobson (2002) whose study found a key and crucial aspect of instructor training to be teacher-mentoring.

In contrast, many participants stated that upon arrival at TCAT they had little to no training or were simply shown their classroom and handed their keys. Participants suggested ensuring all new instructors take part in training that involved either the TBR 2-day new instructor training; partnering with tenured instructors within their program at their TCAT location or at another TCAT location; teaching instructors on various aspects of classroom management; and giving instructors an employee handbook with syllabi examples, lesson plan examples, and other resources that they may need, not only at the beginning of their careers at TCAT, but throughout their tenure. This investment in each new instructor's development will decrease instructor attrition over time, decrease instructor frustration inside and outside of the classroom, and help increase student success (Perkins-Gough, 2003).

In contrast to the suggestions for improvement, results showed that TCAT training, including orientation, new instructor training, resources, and online training were the most frequently identified as being helpful in achieving success. While this finding contradicts the aforementioned findings, it is evident that the training that was successful for some participants could be beneficial when all new instructors receive the same training and professional development upon initial hire at TCAT. The suggestion of developing a structured training program that all new TCAT instructors participate in upon initial hire, could lead to increased teacher success and development (Kokeuller, n.d.)

Furthermore, participants identified (Table 15) that they would like to participate in more opportunities for not only general training but also specific training upon initial hire. Trainings would include having a mentor program, training on topics related to the instructor's TCAT program, reviewing the employee handbook, knowledge regarding administration issues, understanding of policies and procedures, time to train, autonomy of training, and regular check-

ins to ensure that instructors are achieving their teaching goals. This finding relates directly to the theory of action learning, in which participants would seek out further opportunities, not just upon initial hire but also during their tenure at TCAT, to continuously learn and develop (Brockbank & McGill, 2003; Vince, 2010).

Research Question 2 (RQ2). To address research question two, eight quantitative statements/questions and five qualitative statements/questions were analyzed. Descriptive statistical analyses were conducted, which identified overall mean levels of agreement with receiving an employee handbook, training on developing a lesson plan, partnering with another TCAT instructor, having a faculty mentor, reading through the employee handbook, time to review teaching best practices, being taught classroom management skills, and partnering with TCAT instructors at different TCAT locations. As shown in Table 17, for each statement the levels of agreement ranged from 26.1% to 77.8%. The majority of respondents (77.8%) reported that they had received an employee handbook; however, only 56.9% indicated that they had read the handbook in its entirety.

Additionally, while the TCAT-Knoxville handbook includes a sample lesson plan, only 26.1% of participants responded that they were trained on how to develop a lesson plan. Lesson plans describe all aspects of what will be taught, when it will be taught, and the methods utilized for teaching, and they have been identified as one of the key elements to creating a successful learning environment (Nesari & Heidari, 2014). Furthermore, only 27.5% of participants agreed that they were given time to review teaching best practices prior to instructing their students. With little knowledge of best practices and/or how to develop a lesson plan, instructors may have struggled within their classrooms upon being hired at TCAT. In turn, increasing instructor

frustration, which can lead to a decrease in student success and an increase in instructor attrition (Kelly, 2019).

To examine the data within RQ2 further, several independent *t*-tests were conducted. Within the independent *t*-tests, the Holland Codes were collapsed into two categories, Realistic ($n = 59$) and all other codes ($n = 34$), to compare the means of participants working in programs within the Realistic Holland Code versus all other Holland Codes to identify whether there was a significant difference between the population means.⁴ Among all RQ2 Likert items, no significant difference was found between the means of either groups. The low mean Likert ratings for each statement/question for RQ2 show that responses from the population would rate similarly to those identified within the current study's data.

To assess possible differences in responses further, levels of participant agreement for each RQ2 quantitative statement were analyzed based on gender (male or female) and ethnicity (white or non-white). Similar levels of agreement were found between male and female participant responses for "I partnered with at least one other TCAT faculty member to improve my ability as an instructor," and "I read through my employee handbook in its entirety." Similarly, White and Non-White participants indicated comparable levels of agreement regarding the statements "I received an employee handbook" and "I partnered with other instructors at TCAT to learn different teaching styles." To understand whether the mean differences of each statement between genders or ethnicity were significant, two independent *t*-tests were conducted.

⁴ It should be noted that among all programs offered within various TCAT locations, programs with the Holland Code of Realistic make up 61.7% of all programs. All other Holland Codes have between 2.6%-11.1% occurrence, which combined are still represented within less than 50% of all programs among TCAT locations.

Of the eight closed-ended statements from RQ2, the statements “I was trained on how to develop a lesson plan” and “I was given time to review teaching best practices before instructing my students” were found to be statistically significant, with a large effect size. Regarding ethnicity, two statements were statistically significant: “I partnered with at least one other TCAT faculty member to improve my ability as an instructor” and “I was taught specific classroom management skills.” Therefore, further research should examine why these differences occurred and how to offer equal levels of training to all TCAT instructors regardless of gender or ethnicity.

Further analysis utilizing the qualitative item responses was conducted to gain a clearer understanding of RQ2. Utilizing an axial coding method (Merriam & Tisdell, 2016; Strauss & Corbin, 2008), the themes identified in Tables 19-23 gave a richer picture of training needs, training received, and training strengths and weaknesses. For example, Table 19 shows that Partnerships, Required Training, and Classroom Training were some of the key areas of training available to new TCAT instructors. However, these three themes were also identified as key aspects requiring improvement when assessing instructor training offered in both RQ1 and RQ2. Thus, exhibiting that even though some themes were found to be successful in training, they were later identified as areas of opportunity regarding instructor training. As such, instructors desire to learn and strengthen their pedagogical skills within their specialty area through effective and continuous action learning (Blankman, van der Schee, Volman, & Boogaard, 2015; Scoggins & Sharp, 2017).

Additionally, participants suggested ensuring that all new instructors take part in training that involved either the TBR 2-day new instructor training; partnering with tenured instructors in their program at their TCAT location or at another TCAT location; teaching instructors on

various aspects of classroom management; and giving instructors an employee handbook with syllabi examples, lesson plan examples, and other resources that they may need not only in the beginning of their career at TCAT, but throughout their time there. Overall responses for RQ2 revealed that the majority of participants did not receive the training needed to help them achieve success within their classrooms. However, it is evident from the review of qualitative responses that these instructors desire to continue to learn, are looking for autonomy in their own development, and based on requests for continued learning, seek to develop further under the theoretical lens of action learning (Brockbank & McGill, 2003; Vince, 2010).

Research Question 3 (RQ3). To address research question three, two quantitative statements/questions and three qualitative statements/questions were analyzed. Descriptive statistical analyses were conducted to identify levels of agreement for both quantitative statements. As shown in Table 29, for each statement the levels of agreement ranged from 45.7% in agreement to 55.5% in agreement. The statements, “I gained a clear understanding of how to motivate my students,” and “I learned how to teach to students with different learning styles,” had some of the highest levels of agreement. However, it should be noted that data indicated that approximately half of participants agreed with each statement, identifying a need for further development and training regarding both statements.

To examine the data within RQ3 further, several independent *t*-tests were conducted. Within the independent *t*-tests, the Holland Codes were collapsed into two categories, Realistic ($n = 59$) and all other codes ($n = 34$). This allowed for a comparison between the means scores of participants within the Realistic Holland Code versus all other Holland Codes to identify whether

there was a significant difference between the means.⁵ Among both RQ3 Likert items, no significant differences were found based on Holland Code. To further assess possible differences in responses, levels of participant agreement for both RQ3 quantitative statements were analyzed based on gender (male or female) and ethnicity (White or Non-White). Both independent *t*-tests showed that there were no significant differences in mean scores based on gender or ethnicity.

The qualitative item responses were assessed to gain a clearer understanding of RQ3. Utilizing an axial coding method (Merriam & Tisdell, 2016; Strauss & Corbin, 2008), the themes identified from Tables 33 and 34 gave a clearer picture of training needs. Themes within the qualitative data aligned directly with the quantitative data collected. More specifically, it was not surprising to observe suggestions that would improve training and enable instructors to be better prepared to instruct their students (Louws, Meirink, van Veen, & van Driel, 2017). In addition, the participants made it apparent that they wanted to continue their personal development and take ownership for it through different avenues of training and learning, which is essential in improving student learning and teacher quality (Louws, et al., 2017). Furthermore, respondents exhibited a desire to expand their professional development through instructor partnerships (Brockbank & McGill, 2003; Vince, 2010).

Limitations of the Study

The present study had several limitations that may have affected participation and responses, specifically regarding any missing data. First, in Strand 1, several limitations were apparent prior to and during data collection. Specifically, there were difficulties in getting participation even after multiple attempts to do so. In addition, several possible participants

⁵ It should be noted that among all programs offered within various TCAT locations, programs with the Holland Code of Realistic make up 61.7% of all programs. All other Holland Codes have between 2.6%-11.1% occurrence, which, when combined, are still represented within less than 50% of all programs among TCAT locations.

decided to cancel their participation for unknown reasons. As the interviews and observations took place within TCAT-K, it was communicated that cancellations were due to possible participants feeling uncomfortable that the confidentiality of their participation may be at risk.

Strand 2 had equally challenging limitations. One such limitation was due to IRB and TBR guidelines where the primary researcher was not allowed to contact instructors directly and instead had to rely on TCAT presidents to announce the study to their instructors. The lack of a personal relationship between the TCAT presidents and the primary researcher could have impacted recruitment. As such, not all TCAT sites were represented within the study and convenience sampling was utilized to gain study participants.

Regarding possible participants who did receive notice of the study, only those that wanted to participate and respond to the survey did so. Furthermore, due to survey fatigue, lack of motivation, technology issues, or other possible unknown reasons not all participants who began the survey completed it in its entirety. For the data that was collected, the responses may not represent the views of all TCAT instructors. Therefore, creating issues with generalizability of the data. Lastly, as there has been a large amount of diversity within TCAT, many instructors received training years prior to the current study, so it was difficult to compare the training that was received among the participants.

Practical Implications and Conclusions

Practical Implications. The results of the current study (Strand 2) have significant implications for TBR, TCAT institutions, future TCAT instructors, and current TCAT instructors. Results showed that most instructors received little to no training upon their initial hire at their TCAT location. Regardless of an instructor's gender, ethnicity, or Holland Code of program, participants indicated that they desired clear and concise training upon initial hire, but

also would like to be offered various training opportunities during their tenure at TCAT. This suggestion supports the possibility of standard training materials and procedures to be developed for TCAT new instructor training.

This training could include review of the employee handbook, partnering with a mentor to learn teaching best practices, observing instructors, and a two-day training conducted by TBR for each new instructor. Furthermore, a required structured new hire orientation packet that might include human resources aspects, classroom management resources, lesson plan development resources, policies and procedures, and teaching best practices would be beneficial to all TCAT locations. Additionally, developing a mentor program where seasoned instructors partner with new instructors to guide them within their first year of teaching has been shown to be a specific request of study participants. St. Clair (1994) examined faculty mentoring within a community college and identified that while faculty mentoring is very rare, it is a necessity as “typically, higher education faculty members have not been trained in education” (p. 29). Harnish and Wild (1994) conducted a study examining the effects of peer mentoring where new and/or novice instructors were guided their more experienced peers. They identified that both novice and veteran instructors experienced professional growth (Harnish & Wild, 1994). Furthermore, they identified that new ideas were developed, teaching strategies were strengthened, and teaching effectiveness increased (Harnish & Wild 1994).

In addition to new hire training, continued professional development for current instructors would be useful to all TCAT locations. Bayar’s (2014) study identified long-term engagement and training to be a crucial aspect for instructor success. Activities for continued development may include attending conferences, participating in webinars, participating in a mentoring program, attending specific topic training opportunities, and regularly communicating

about TCAT and TBR policy and procedural updates. Activities such as these are necessary for instructor professional development which fosters the continued development of instructors' skills and knowledge within their classroom (Garet, Porter, Desimone, Birman, & Suk Yoon, 2001).

The implications of instructor training, assessed from participants' responses, for new and tenured instructors at TCAT align directly with the theory of action learning. More specifically, the idea that instructors have the ability to problem solve and have autonomy allows for continuous learning and professional development within their role as a TCAT instructor (Brockbank & McGill, 2003; Davis et al., 2012; Miller, 2003; Vince, 2010).

Future Research in Career and Technical Instructor Professional Development.

After analyzing the data from Studies 1 and 2, further analysis should be conducted to identify instructor professional development satisfaction by examining time at TCAT, age, and/or prior teaching experience. A thorough analysis comparing data collected between those with more teaching experience versus those with less teaching experience would be beneficial in determining additional professional development needs.

Additionally, through exploring the specific needs identified in the current study, any standardized training that may be developed should be assessed using the current instrument to identify increases and/or decreases in agreement level responses surrounding the quantitative data. Furthermore, by seeking out and utilizing the feedback of current TCAT instructors on ways to improve instructor training, further data can be gathered that focuses on the theory of action learning. Assessing the level of action learning taking place for each instructor within each TCAT location can better inform each TCAT and TBR on further ways to improve TCAT instructor training and continued professional development.

Future research should be expanded to assess the professional development of instructors within other technical institutions throughout the United States. Based on prior research, there is a need for continued professional development of technical college instructors (Wallin & Smith, 2005). Implications of the current study indicate that there is a definitive need for continued professional development of instructors within TCAT, among technical institutions, but to continue instructor growth, research should be conducted to identify the professional development needs of new and tenured instructors within various settings, including community colleges and four-year institutions. As students enrolling in various higher education systems continue to change, so should the teaching methodologies utilized. Thus, training to ensure quality instructor is provided to current and future students, research should continue in the field of instructor training and professional development.

Overall Conclusions. The current study sought to identify professional development needs and successes with the Tennessee College of Applied Technology locations. As TCAT enrollment continues to increase due to the success of TCAT instructors and programs throughout the state, the results of this study seek to further enhance TCAT's opportunities for continued success for instructors and students within each TCAT location. The initial study, Strand 1, of interview and observations provided the data needed to develop a new survey to further answer the three main research questions. The newly developed survey which consisted of closed and open-ended statements and questions was located on the QuestionPro (2017) platform and open to any current TCAT instructor to participate in. The data provided information regarding professional development needs within the TCAT system. As data was collected, it was cleaned for all unique identifiers and analyzed using both qualitative and quantitative methods.

Instructors reported data regarding their personal experiences with instructor training when they began their career at TCAT. They provided suggestions to improve instructor training, successes of training based on their own experiences, and recommendations for continued professional development after initial hiring of new instructors. It was evident from the data collected that instructors, regardless of gender, ethnicity, teaching program, or experience have a deep desire to improve initial instructor training at TCAT, as well as, their own continued professional development as instructors at TCAT. This desire to improve their teaching pedagogy has been shown to be crucial to instructor and student success (Perkins-Gough, 2003).

While further data should be collected that gives a more in-depth understanding of possible ways to improve instructor professional development, it is evident that the participants of the current study are passionate about their own experience and in turn, the experience and training of their peers and future TCAT instructors. TCAT has shown to be at the forefront of success regarding technical college enrollment, graduation rates, and instructor success; however, as within all institutions, there is always a need to continually grow and improve. Through a structured training program for all new instructors, continued professional development for tenured instructors, and increased communication of instructor professional development needs between TCAT and TBR, TCAT will continue to be a leader in technical college education.

References

- Akalin, S., & Sucuoglu, B. (2015). Effects of classroom management intervention based on teacher training and performance feedback on outcomes of teacher-student dyads in inclusive classrooms. *Educational Sciences: Theory & Practice*, 15(3), 739-758. doi:10.12738/estp.2015.3.2543
- Austin Community College. (n.d.) *Classroom observation checklist*. Retrieved from <https://www.austincc.edu/hr/eval/procedures/ClassObservCheck.pdf>.
- Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and Teacher Education*, 27(1), 10-20. doi: 10.1016/j.tate.2010.08.007.
- Bayar, A. (2014). The components of effective professional development activities in terms of teachers' perspective. *International Online Journal of Educational Studies*, 6(2), 319-327. Retrieved from <https://doi-org.proxy.lib.utk.edu/10.15345/iojes.2014.02.006>.
- Benishek, L. E., Gregory, M. E., Hodges, K., Newell, M., Hughes, A. M., Marlow, S.,... Salas, E. (2016). Bringing the science of team training to school-based teams. *Theory Into Practice*, 55(2), 112-119. doi:10.1080/004050841.2016.1148987
- Beverborg, A. O. G., Slegers, P. J. C., & Veen, K. V. (2015). Fostering teacher learning in VET colleges: Do leadership and teamwork matter? *Teaching and Teacher Education*, 48, 22-23. doi:10.1016/j.tate.2015.01.015
- Blankman, M., van der Schee, J., Volman, M., & Boogaard, M. (2015). Primary teacher educators' perception of desired and achieved pedagogical content knowledge in geography education in primary teacher training. *International Research in Geographical and Environmental Education*, 24(1), 80-94. doi: 10.1080/10382046.2014.967110.
- Botha, P. (2012). Continuous professional development workshops can be an opportunity for

- conscious and intentional knowledge development: Case-specific reflections. *Social Work/Masstskaplike Werk*, 48(4), 420-434. doi:10.15270/48-4-25
- Brockbank, A., & McGill, I. (2003). *The action learning handbook: Powerful techniques for education, professional development and training* (1st ed.). London: Taylor and Francis.
- Bouguen, A. (2016). Adjusting content to individual student needs: Further evidence from an in-service teacher training program. *Economics of Education Review*, 50, 90-112. doi: 10.1016/j.econedurev.2015.12.004.
- Bureau of Labor Statistics, U.S. Department of Labor. (n.d.). *Occupational outlook handbook*. Retrieved from <https://www.bls.gov/ooh/education-training-and-library/career-and-technical-education-teachers.htm>.
- Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum*, 41(5), 545-547. Retrieved from http://link.galegrup.com.proxy.lib.utk.edu:90/apps/doc/A382806651/AONE?u=tel_a_utl&sid=AONE&xid=30b5668e.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry research design: Choosing among five approaches* (4th ed.). Thousand Oaks, CA: Sage Publications, Ltd.
- Dearnley, C., Rhodes, C., Roberts, P., Williams, P., & Prenton, S. (2018). Team based learning in nursing and midwifery higher education: A systematic review of the evidence for change. *Nurse Education Today*, 60, 75-83.
- Drive to 55 Alliance. (2018). Retrieved from <http://driveto55.org/the-alliance/>.

- Flick, U. (2014). *An introduction to qualitative research* (5th ed.). Thousand Oaks, CA: Sage Publications, Ltd.
- Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., Suk Yoon, K. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38(4), 915-945.
- Garza Mitchell, R. L. (2017). Online career and technical education in the community college. *Community College Journal of Research and Practice*, 41(6), 336-340.
doi:10.1080/10668926.2016.1270242
- Glaser, B. G., & Strauss, A. L. (1999). *Discovery of grounded theory*. New York: Routledge.
- Goodyear, V. A. (2016). Sustained professional development on cooperative learning: Impact on six teachers' practices and students' learning. *Research Quarterly for Exercise and Sport*, 88(1), 83-94. doi:10.1080/02701367.2016.1263381
- Gourneau, B. (2005). Five attitudes of effective teachers: Implications for teacher training. *Essays in Education*, 13(1), 1-10. Retrieved from <https://openriver.winona.edu/eie/vol13/iss1/5>.
- Gravetter, F. J., & Wallnau, L. B. (2017). *Statistics for the Behavioral Sciences 10*. Boston, MA: Cengage Learning.
- Hamm, T. (2016). *Why you should consider trade school instead of college*. Retrieved from <https://www.thesimpledollar.com/why-you-should-consider-trade-school-instead-of-college/>.
- Harnish, D., & Wild, L. A. (1994). Mentoring strategies for faculty development. *Studies in Higher Education*, 19(2), 191-201. doi: 10.1080/03075079412331382037.
- Hobson, A. J. (2002). Student teachers' perceptions of school-based mentoring in initial teacher

- training (ITT). *Mentoring and Tutoring*, 10(1), 5-20. doi: 10.1080/13611260220133177.
- Holland, J. L. (1985). *Making vocational choices: A theory of vocational personalities and work environments*. Odessa, FL: Psychological Assessment Resources.
- Holland, J. L. (1996). Exploring careers with a typology: What we have learned and some new directions. *American Psychologist*, 51(4), 397-406. doi: 10.1037/0003-066X.51.4.397.
- Imperatore, C., & Hyslop, A. (2017). CTE policy past, present, and future: Driving forces behind the evolution of federal priorities. *Peabody Journal of Education*, 92, 275-289. doi:10.1080/0161956X.2017.1302221
- Iserbyt, P., Theys, L., Ward, P., & Charlier, N. (2017). The effect of a specialized content knowledge workshop on teaching and learning basic life support in elementary school: A cluster randomized controlled trial. *Resuscitation*, 112, 17-21.
- Kelly, M. (2019, June). *Importance of Effective Teacher Training*. Retrieved from <https://www.thoughtco.com/importance-of-effective-teacher-training-8306>.
- Kokemuller, N. (n.d.) The importance of a structured training program. *Small Business-Chron.com*. Retrieved from <http://smallbusiness.chron.com/importance-structured-training-program-61983.html>.
- Jinkens, R. C. (2009). Nontraditional students: Who are they? *College Student Journal*, 43(4), 979-987.
- Juszkiewicz, J. (2017, November). *Trends in community college enrollment and completion data, 2017*. Washington, DC: American Association of Community Colleges.
- Kelly, M. (2019, June 23). *Great teachers are trained to succeed*. Retrieved from <https://www.thoughtco.com/importance-of-effective-teacher-training-8306>.
- Lammers, W. J., Gillasp, Jr., J. A., & Hancock, F. (2017). Predicting academic success with

- early, middle, and late semester assessment of student-instructor rapport. *Society for the Teaching of Psychology*, 44(2), 145-149. doi:10.1177/0098628317692618
- Lechuga, V. M. (2014). A motivation perspective on faculty mentoring: The notion of “non-intrusive” mentoring practices in science and engineering.” *Higher Education*, 68, 909-926. doi:10.1007/s10734-014-9751-z
- Leon, A. C., Davis, L.L., & Kraemer, H. C. (2011). The role and interpretation of pilot studies in clinical research. *Journal of Psychiatric Research*, 45(5), 626-9. doi:10.1016/j.jpsychires
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. London: SAGE.
- Louws, M. L., Meirink, J. A., van Veen, K., & van Driel, J. H. (2017). Teachers’ self-directed learning and teaching experience: What, how, and why teachers want to learn. *Teaching and Teacher Education*, 66, 171-183. doi: 10.1016/j.tate.2017.04.004.
- Mangum, E. (2017). Teaching and student success: ACUE makes the link. *Change: The magazine of higher learning*, 49(5), 17-25. doi:10.1080/00091383.2017.1366806
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). San Francisco, CA: Jossey-Bass.
- Meyer, K. A., & Murrell, V. S. (2014). A national study of training content and activities for faculty development for online teaching. *Journal of Asynchronous Learning Networks*, 18(1), 3-18. Retrieved from http://link.galegroup.com.proxy.lib.utk.edu:90/apps/doc/A437132680/AONE?u=tel_a_utl&sid=AONE&xid=3689bef5.
- Miller, P. (2003). Workplace learning by action learning: A practical example. *Journal of Workplace Learning*, 15(1), 14-23. doi:10.1108/13665620310458785
- Morrow, J. A., & Skolits, G. (2014). Twelve steps of data cleaning [PowerPoint slides].

- Moses, K. M. (2016). Improving the quality and competence of technical vocational education and training output through vocational school cooperation with industry: A case study of Uganda. *AIP Conference Proceedings*, 1778(1), 1-5. doi:10.1063/1.4965794
- Neidorf, R. (2007). Teach beyond your reach: An instructor's guide to developing and running successful distance learning classes, workshops, training sessions and more. *The Journal of Academic Librarianship*, 33(2), 306. doi:10.1016/j.acalib.2007.01.005
- Nelson, J. (2017). Using conceptual depth criteria: Addressing the challenge of reaching saturation in qualitative research. *Qualitative Research*, 17(5), 554-570. doi:10.1177/1468794116679873
- Nguyen, G. T. (2015). A case study of students' motivation in college algebra courses. *Community College Journal of Research and Practice*, 39, 693-707. doi:10.1080/10668926.2013.824394
- Ntoumanis, N., Thøgersen-Ntoumani, C., Quested, E., & Hancox, J. (2017). The effects of training group exercise class instructors to adopt a motivationally adaptive communication style. *Scandinavian Journal of Medicine & Science in Sports*, 27, 1026-1034. doi:10.1111/sms.12713
- Obad, A. S., Peeran, A. A., Shareef, M. A., Alsheikh, W. J., Kalagi, D. A., AlAmodi, A. A. Yaqinuddin, A. (2016). Assessment of first-year medical students' perceptions of teaching and learning through team-based learning sessions. *Advanced Physiological Education*, 40, 536-542. doi:10.1152/advan.00001.2016
- Peat, J., Mellis, C., Williams, K., & Xuan, W. (2002). *Health science research: A handbook of quantitative methods*. London: Sage.
- Perkins-Gough, D. (2003). Keeping good teachers. *Educational Leadership*, 60(8), 96. Retrieved

from <http://search.ebscohost.com.proxy.lib.utk.edu:90/login.aspx?direct=true&db=ulh&AN=9722760&scope=site>.

- Phillips, L. A., Baltzer, C., Filoon, L., & Whitley, C. (2017). Adult student preferences: Instructor characteristics conducive to successful teaching. *Journal of Adult and Continuing Education, 23*(1), 49-60. doi:10.1177/1477971416683488
- Poynton, T. A., DeFouw, E. R., & Morizio, L. J. (2019). A systematic review of online response rates in four counseling journals. *Journal of Counseling & Development, 97*, 33-42. doi:10.1002/jcad.12233
- Postsecondary Teachers. (n.d.) Retrieved from <https://collegegrad.com/careers/postsecondary-teachers>.
- Professional Development for Workplace Instructors. (2017). Retrieved from <https://blink.ucsd.edu/HR/training/instructor/pro-devopment/index.html>.
- QuestionPro Survey Software (2019). Retrieved from <https://www.questionpro.com/article/>.
- Richmond, G., Dershimer, R. C., Ferreira, M., Maylone, N., Kubiskey, G., & Meriweather, A. (2017). Developing and sustaining an educative mentoring model of STEM each professional development through collaborative partnership. *Mentoring & Tutoring: Partnership in Learning, 25*(1), 5-26. doi:10.1080/13611267.2017.1308097
- Rossetto, K. R. (2014). Qualitative research interviews: Assessing the therapeutic value and challenges. *Journal of Social and Personal Relationships, 31*(4), 482-489. doi:10.1107/0265407514522892
- Saldaña, J. (2013). *The coding manual for qualitative researchers* (2nd ed.). Thousand Oaks, CA: Sage Publications, Ltd.
- Schademan, A. R., & Thompson, M. R. (2016). Are college faculty and first-generation, low-

- income students ready for each other? *Journal of College Student Retention: Research, Theory, & Practice*, 18(2), 194-216. doi:10.1177/1521025115584748
- Scoggins, N., & Sharp, K. (2017). Learning for differentiation – An action in learning approach to teacher professional learning. *Australian Educational Leader*, 39(1), 24-27. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eue&AN=125301482&scope=site>.
- Sheehan, K. B. (2001). E-mail survey response rates: A review. *Journal of Computer-Mediated Communication*, 6(2). doi:10.1111/j.1083-6101.2001.tb00117.x
- Shrive, F. M., Stuart, H., Quan, H., & Ghali, W. A. (2006). Dealing with missing data in a multi-question depression scale: A comparison of imputation methods. *BMC Medical Research Methodology*, 6(57), 1-10. doi: 10.1186/1471-2288-6-57.
- Smith, A. A. (2015). *Promise provides enrollment boost*. Retrieved from <https://www.insidehighered.com/news/2015/11/24/promise-program-sharply-lifts-tennessee-college-freshman-enrollment>.
- Smith, J., & Nadelson, L. (2016). Learning for you and learning for me: Mentoring as professional development for mentor teachers. *Mentoring & Tutoring: Partnership in Learning*, 24(1), 59-72. doi:10.1080/13611267.2016.1165489.
- St. Clair, K. L. (1994). Faculty-to-faculty mentoring in the community college: An instructional component of faculty development. *Community College Review*, 22(3), 23-35.
- Strauss, A. L., & Corbin, J. (2008). *Basics of qualitative research* (3rd ed.). London: Sage.
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). New Jersey: Pearson Education, Inc.
- TBR: The College System of Tennessee. (n.d.). Retrieved from <https://www.tbr.edu/>.

- Tennessee College of Applied Technology—Knoxville. (2017). *Instructor and staff handbook*.
- Tennessee College of Applied Technology—Knoxville (2018). *Cosmetology instructor job posting*. Retrieved from <https://tcatknoxville.edu/about/jobs/cosmetology-evening-instructor-part-time-2018-09>.
- Tennessee College of Applied Technology—Knoxville (2018). *HVAC instructor job posting*. Retrieved from <https://tcatknoxville.edu/about/jobs/heating-ventilation-air-conditioning-and-refrigeration-adjunct-instructor-2018-10>.
- Tennessee Higher Education Commission and Student Assistance Corporation. (2017). *Tennessee promise sees increased enrollment, strong retention rates in year 2*. Retrieved from <https://www.tn.gov/thec/news/2017/2/2/tennessee-promise-sees-increased-enrollment-strong-retention-rates-in-year.html>.
- Tennessee Promise. (n.d.). Retrieved from <http://tnpromise.gov/>.
- Tennessee Reconnect. (n.d.). Retrieved from <http://tnreconnect.gov/>.
- Trammell, B. A., & Aldrich, R. S. (2016). Undergraduate students' perspectives of essential instructor qualities. *Journal of the Scholarship of Teaching and Learning*, 16(1), 15-30. doi:10.14434/josotl.v16i1.19178
- Travis, L. L., Hudson, N. W., Henricks-Lepp, G. M., Street, W. S., & Weidenbenner, J. (2016). Team-based learning improves course outcomes in introductory psychology. *Teaching of Psychology*, 43(2), 99-107. doi:10.1177/0098628316636274
- Trussell, R. P., Lewis, T. J., & Raynor, C. (2016). The impact of universal teacher practices and function-based behavior interventions on the rates of problem behaviors among at-risk students. *Education and Treatment of Children*, 39(3), 261-282. doi:10.1353/etc.2016.0012

U.S. Bureau of Labor Statistics. (2015). *Summary*. Retrieved from www.bls.gov/ooh/education-training-and-library/postsecondary-teachers.htm.

University 101 Programs. (n.d.). Retrieved from sc.edu/univ101/instructor/pd/index.html.

Vatter, K. (2018, October 18). Personal interview.

Vince, R. (2010). Action learning and organization learning: Power, politics and emotion in organizations. *Action Learning: Research and Practice*, 1(1), 63-78.

doi:10.1080/1476733042000187628.

Wallin, D. L., & Smith, C. L. (2005). Professional development needs of full-time faculty in technical colleges. *Community College Journal of Research and Practice*, 29(2), 87-108.

doi: 10.1080/10668920590524238.

Warrens, M. J. (2011). The effects of combining categories on Bennett, Alpert and Goldstein's *S. Statistical Methodology*, 9, 341-352. doi: 10.1016/j.stamet.2011.09.001.

Weisstein, E. (2019). *Bonferroni Correction*. Retrieved from

<http://mathworld.wolfram.com/BonferroniCorrection.html>.

Appendix

Appendix A: Strand 1 Recruitment Email
FACULTY RECRUITMENT EMAIL

Dear Faculty,

My name is Sarah Nadel and I am a 4th year Doctoral student at the University of Tennessee studying Evaluation, Statistics, and Measurement (ESM). I have worked with TCAT-Knoxville before on a variety of projects while progressing through my doctoral program. As I am now beginning my dissertation, I believe it is imperative that instructors are provided every resource they need to excel in the classroom. As each of you are very knowledgeable within your field, I would like to set up one-on-one interviews with you to discuss teacher training experiences and needs as a TCAT-K instructor. The interviews will be the first part of a two-part dissertation research study that I will be conducting.

The one-on-one interviews will last approximately 45-60 minutes and take place on or off campus to gain more information regarding instructor training. These interviews will remain confidential and only I will have access to the data obtained. All data will be reported anonymously and will not identify any specific faculty member or their responses.

The second part of the project includes classroom observation where I will observe how you organize your course and lecture and identify students' reactions to classroom activities. The observations will also remain confidential as instructors will not be identified and all data collected will remain on my private computer.

I thank each of you in advance for your willingness to assist me in my dissertation endeavor and look forward to working with not only TCAT-K, but each of you on an individual level.

Best,

Sarah Nadel
snadel@utk.edu

Faculty Supervisor:

Dr. Jennifer Ann Morrow
Evaluation Statistics and Measurement Program
University of Tennessee
jamorrow@utk.edu

Appendix B: Strand 1 Classroom Observation Checklist⁶
CLASSROOM OBSERVATION CHECKLIST

Date: _____

Class Observed: _____

Time: _____

**All items marked Not Observed must be explained in the Comments*

	Context of Classroom	Observed	Not Observed	Comments
Class Structure:				
Reviews previous day's course content.				
Gives overview of day's course content.				
Summarizes course content covered.				
Directs student preparation for next class.				
Comments:				
Methods:				
Provides well-designed materials.				
Employs non-lecture learning activities (i.e. small group discussion, student-led activities).				
Invites class discussion.				
Employs other tools/instructional aids (i.e. technology, computer, video, overheads).				
Delivers well-planned lecture.				
Comments:				
Teacher-Student Interaction:				
Solicits student input.				
Involves a variety of students.				
Demonstrates awareness of individual student learning needs.				
Comments:				
Content:				

⁶ Classroom Observation Checklist adapted from
<https://www.austincc.edu/hr/eval/procedures/ClassObservCheck.pdf>

Appears knowledgeable.				
Appears well organized.				
Explains concepts clearly.				
Relates concepts to students' experience.				
Selects learning experiences appropriate to level of learning.				
Comments:				
Other Comments:				

Observer Signature

Date

Entered into SPSS

Date

I learned how to teach to students with different learning styles.	☐	☐	☐	☐	☐	☐
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

Section 2:

Directions: Please answer the following questions/statements in as much detail as possible:

1. Please describe the instructor training you received when you started your career at TCAT.

2. What aspects of your instructor training when you started your career at TCAT did you find were the most helpful in making you a successful instructor?

3. What aspects of your instructor training when you started your career at TCAT could have been improved in order to make you a successful instructor?

4. Prior to working at TCAT, what previous training/experience did you have teaching students? (i.e., conference trainings, webinars, mentor-mentee training)

Directions: Please answer the following questions/statements in as much detail as possible:

1. Since you have been a faculty member at TCAT, what other types of instructor training have you received while employed at TCAT?

2. What aspects of the instructor training at TCAT could be improved upon for instructors?

3. What specific training activities/lessons do you wish you had received when you began your career at TCAT?

4. What else would you like to share about the instructor training at TCAT?

5. What aspects of your instructor training received while at TCAT has impacted you the most?

Directions: Please complete the following demographic section. The following information is being asked to better identify different programs and people, based on various attributes, who desire more professional development within their instructor role at TCAT. Please keep in mind all your responses will remain confidential.

1. How long have you been teaching at your TCAT location?
 - a. 0-2 years
 - b. 3-5 years
 - c. 6-10 years
 - d. 11-15 years
 - e. 16-20 years
 - f. 20+ years
 - g. Prefer Not to Answer

2. What program are you affiliated with at TCAT? (Please select from the menu below)
 - Administrative Office Technology
 - Advanced Manufacturing Production Technology
 - Advanced Aesthetics
 - Aesthetics Technology
 - Assistant Animal Laboratory Technology
 - Automation Mechatronics
 - Automotive Technology
 - Aviation Maintenance Technology
 - Avionics Maintenance Technology
 - Barbering
 - Building Construction Technology
 - Carpenters and Millwrights App.
 - Central Sterile Processing
 - Certified Nursing Assistant
 - CNC Machining Technology
 - Collision Repair Technology
 - Computer Aided Design Technology
 - Computer Information Systems
 - Computer Information Technology
 - Computer Electronics/Computer Operating Systems and Network Technology
 - Computer Numeric Control
 - Computer Support Technician
 - Cosmetology
 - Cosmetology Instructor Training
 - Culinary Arts
 - Customer Service Representative
 - Dental Assisting
 - Dental Laboratory Technology
 - Diesel Powered Equipment Technology
 - Dietary Manager

- Digital Graphic Design Technology
- Digital Processing Systems and Networking
- Early Childhood Education
- Electrical and Plumbing Construction Technology
- Electrician Apprenticeship
- Electro-Mechanical Technology
- Electronic Systems
- Electronics Technology
- Emergency Medical Technology
- Global Logistic and Supply Chain Technology
- Health Information Management Technology
- Health Science Education
- HVAC/R Technician
- Hybrid Electrical Vehicle Technology
- Industrial Electricity
- Industrial Electronics
- Industrial Maintenance Mechatronics Technology
- Information Technology
- Injection Molding/Robotics
- Ironworkers Apprenticeship
- Landscape and Turf Management
- Machine Tool Technology
- Major Appliance Repair
- Manicuring
- Manufacturing Technology Program
- Massage Therapy
- Mechanical Maintenance, Electrical, and Instrumentation/Mechatronics
- Medical Assisting/Patient Care Technology
- Medical Office Information Technology
- Millwright Skills
- Motorcycle and Marine Service Technology
- Nail Technician
- Nursing Aide
- Outdoor Power Equipment
- Pharmacy Technology
- Phlebotomy Technology
- Pipefitting & Plumbing Technology
- Power Line Construction and Maintenance Technology
- Power Sports Technology
- Practical Nursing
- Residential Building Maintenance
- Residential, Commercial, Industrial Electricity
- Retail, Hospitality, Tourism Technology
- Road Building Equipment Service Technician

- Sheet Metal Workers
- Surgical Technology
- Technology Foundations
- Telecommunications Technology
- Tool and Die Maintenance Technology
- Transportation, Distribution, Warehousing, and Logistics
- Truck Driving
- Welding
- Other:

-
- Prefer Not to Answer

3. Have you had any previous teaching experiences at any other institution?

Yes No Prefer Not to Answer

a. If yes, please list how long you were teaching prior to teaching at TCAT.

4. How long were you in your industry (not as an instructor) prior to teaching at TCAT?

- a. 0-2 years
- b. 3-5 years
- c. 6-10 years
- d. 11-15 years
- e. 16-20 years
- f. 20+ years
- g. Prefer Not to Answer

5. What is your gender? Female Male Prefer Not to Answer

6. Do you identify as Hispanic/Latino? Yes No Prefer Not to Answer

7. What is your ethnicity? (Please select all that apply)

- American Indian/Alaska Native
- Asian
- Black or African American
- Native Hawaiian/Pacific Islander
- White
- Two or More Races
- Other: _____
- Prefer Not to Answer

Appendix D: Strand One Instructor Interview Protocol

INSTRUCTOR INTERVIEW PROTOCOL

Identifying Information:

- A. PI: Sarah Nadel
- B. Interview
- C. Type of Interview: In person, one-on-one with subject
- D. Purpose Statement: The purpose of the current study is to assess the professional development needs and satisfaction of training at TCAT-K.
- E. Training Interview

Thank you so much for agreeing to meet with me to discuss TCAT-K instructor training needs, satisfaction, strengths, and weaknesses. Before beginning the interview, I would like to go over the informed consent to ensure you understand the purpose of the study and all your rights associated with participating in the study. While we are reviewing the informed consent, please let me know if you have any questions or concerns that I can answer.

----- (Review Informed Consent) -----

Pre-Interview Preparation:

- A. Pre-Interview Questions
 - a. When beginning your teaching career at TCAT-K what types of training did you receive?
 - i. If participant mentions the employee handbook:
 - 1. Did you review them?
 - 2. Do you still have copies of them?
 - 3. Do you review them as needed?
 - 4. What were the most useful aspects of the handbook?
 - a. How has that helped you as an instructor within your classroom?
 - ii. If participant does NOT mention the employee handbook:
 - 1. What did you find were the most useful elements of that specific training?
 - 2. How has that training helped you as an instructor within your classroom?
- B. Research objectives/method
 - a. Describe what your experience was with instructor training at TCAT-K?
 - i. What events/activities did you participate in?
 - ii. What examples of instruction were given?
 - b. Of the TCAT-K instructor training, what did you find was most useful?

- c. Based on your experiences at TCAT-K, what do you believe are some of the strengths of the TCAT-K instructor training? (Please explain)
 - d. In addition, based on your experiences, what do you believe are some weaknesses of the TCAT-K instructor training? (Please explain)
 - e. Based on your teaching experience at TCAT-K, what are some additional resources within your training that would have been helpful to better prepare you or possibly other instructors to teach within their classrooms? (Please explain)
 - f. What would you change about the current instructor training at TCAT-K?
- C. Interview subject:
- a. Current TCAT-K instructors will be interviewed for the current study. This instructor will have gone through any available TCAT-K training and as such will be able to answer questions that address the research questions within the current study.
- D. Scheduling and Location of Interview
- a. Once a participant volunteers to participate, the researcher will ask the participant for specific times where they can devote an hour to a one-on-one interview. A mutual interview day, time, and location will be agreed upon by both researcher and the participant.

Opening:

- A. Introductory statement
 - a. I will introduce myself, my department, and the purpose of my dissertation project that I'm working on. I will then thank them for agreeing to participate in the current study.
- B. Establishing rapport
 - a. I will ensure I maintain eye contact and have a friendly demeanor with the participant to ensure they feel comfortable. I will also let them know that their responses will not affect their status at TCAT-K and that they will remain confidential as only I will have access to their data and responses. I will make sure they understand they can be as open and honest as they like without any negative repercussions.
- C. Orientation
 - a. I will explain the purpose of the study and how their response will help improve the training at TCAT-K for current and new instructors. I will also let them know that if anytime they feel uncomfortable or confused about any questions/comments, to please feel free to ask questions or they can refuse to answer if they feel uncomfortable. I will remind them that the interview is voluntary and if they decide to leave the interview at any time, they are free to do so and are not obligated to participate in the study.

Body:

- A. Type of questions

- a. I will ask open-ended questions to get the participant to expand on any information they give; additionally, based on their responses, I will ask follow-up open-ended questions that can help expand on their prior answers
- B. Topic outline and/or sample questions
 - a. “When did you begin teaching at TCAT-K?”
 - b. “What training materials did you receive when you begin as an instructor for TCAT-K?”
 - c. “Within your first year of teaching here, what did you find was your biggest challenge?”

Closing:

- A. Transitioning the relationship into its next phase
 - a. In order to signal the end of the interview, I will review what we’ve discussed and ask the participant if they have any questions or any other information regarding the strengths and weakness of TCAT-K instructor training.
 - b. I will thank them for their participation and give them my direct contact information in case they want to follow up, ask any questions, have any concerns, or want to provide any further information.

*Based on the participant’s responses, questions may change as needed to gather more data or expand on participant responses.

Appendix E: Recruitment Letter from TBR to TCAT Presidents
TENNESSEE COLLEGE OF APPLIED TECHNOLOGY
TCAT PRESIDENT STUDY EMAIL

Dear TCAT President,

My name is Sarah Nadel and I am a Doctoral student at the University of Tennessee studying Evaluation, Statistics, and Measurement (ESM). I am currently working on my dissertation study with the support of the Tennessee Board of Regents (TBR). The purpose of my dissertation research study is to assess instructor training needs, strengths, and suggestions for improvement for instructor training across all TCAT locations. Based on TBR's support of my study, I am asking each TCAT President to reach out to each of their faculty members to ask for their participation within the current study. I will be sending you a Faculty Recruitment Email that I am requesting you send to each of your faculty members. This email will include information about the purpose of my study, as well as the direct link to the survey so that each faculty member can participate if they choose to do so. The survey should not take anyone more than 15 minutes to complete and is available through the QuestionPro link: <https://tcatinstructorsurvey.questionpro.com>.

The surveys will remain confidential and only I and my faculty supervisor will have access to the data obtained. All data will be reported anonymously and will not identify any specific faculty member, their TCAT location of employment, or their responses. The data will be used to inform the Tennessee Board of Regents (TBR) and each TCAT location of instructor training and professional development strengths, weaknesses, and needs to better support faculty.

I am requesting that you send the Faculty Recruitment Email out immediately and also a follow-up email reminder in two weeks, which I will notify you via email of on that specific data. I thank each of you in advance for your willingness to assist me in my dissertation endeavor. If you have any questions, please do not hesitate to contact me directly through email.

Best,

Sarah Nadel
snadel@utk.edu

Faculty Supervisor:

Dr. Jennifer Ann Morrow
Evaluation Statistics and Measurement Program
University of Tennessee
jamorrow@utk.edu

Appendix F: Strand 1 Informed Consent - Interviews
INFORMED CONSENT STATEMENT – INSTRUCTOR INTERVIEW
TENNESSEE COLLEGE OF APPLIED TECHNOLOGY
– INSTRUCTOR TRAINING SATISFACTION STUDY

INTRODUCTION

You are invited to participate in this research project examining instructor satisfaction of training offered at the Tennessee College of Applied Technology – Knoxville (TCAT-K). We are interested in assessing the training needs, training satisfaction, and the strengths and weaknesses of instructor training at TCAT-K.

INFORMATION ABOUT PARTICIPANT INVOLVEMENT IN THE STUDY

Your participation in this interview involves a 1-hour, one-on-one, audio recorded interview. During the interview, the researcher will ask about your perceptions of instructor training provided by TCAT-K, the strengths and weaknesses of TCAT-K instructor training, and what training and/or resources should be included within TCAT-K instructor training.

RISKS

The level of risks associated with the current study is minimal. You may feel uncomfortable sharing your opinion; however, please know that all responses will be kept completely confidential and your responses will not affect your status as an instructor at TCAT-K.

BENEFITS

A benefit from your participation in the current study is that your feedback can help improve the quality of TCAT-K instructor training for yourself, current instructors, and new instructors. The interview data will help us provide TCAT-K administration with information regarding instructor perceptions of instructor training, strengths and weaknesses of instructor training, and resources needed for more enhanced and effective instructor training.

CONFIDENTIALITY

The information that you will be sharing with the interviewer will be kept completely confidential. Audio recordings of interviews will be destroyed after transcription and no transcription will include any identifying information that can be linked back to you. Only the researchers will have access to your information and the data will be stored on the researcher's password-protected computer that is in her possession or locked up at all times. No references will be made in any reports that could link you as a participant to the study or the data.

COMPENSATION

You will not receive any compensation for your participation in this research study.

CONTACT INFORMATION

If you have questions at any time about the study or the procedures, (or you experience adverse effects as a result of participating in this study,) you may contact the lead researcher, Sarah Nadel, at the University of Tennessee via email snadel@utk.edu or by phone at 614-357-2393. You may also contact the Co-PI, Dr. Jennifer Ann Morrow (jamorrow@utk.edu).

If you have questions about your rights as a participant, contact the Office of Research at the University of Tennessee at (865)974-7697 or via email at utkirb@utk.edu.

PARTICIPATION

Your participation in this study is completely voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed.

CONSENT

I have read and understood the above information. Please choose the option below that represents your consent, and sign and date on the line below.

- ☐ *I agree to participate in the interview; and have my interview audio recorded.*
- ☐ *I agree to participate in the interview; but do not wish to have my interview audio recorded.*

X _____
Signature

Date

Appendix G: TCAT Faculty Recruitment Emails
TENNESSEE COLLEGE OF APPLIED TECHNOLOGY
FACULTY RECRUITMENT EMAIL

Dear TCAT Faculty,

My name is Sarah Nadel and I am a Doctoral student at the University of Tennessee studying Evaluation, Statistics, and Measurement (ESM). I have worked with TCAT-Knoxville before on a variety of projects while progressing through my doctoral program. The purpose of my dissertation research study is to assess instructor training needs, strengths, and suggestions for improvement for instructor training across all TCAT locations. The survey should not take you more than 15 minutes to complete and is available through the QuestionPro link: <https://tcatinstructorsurvey.questionpro.com>.

The surveys will remain confidential and only I and my faculty supervisor will have access to the data obtained. All data will be reported anonymously and will not identify any specific faculty member, their TCAT location of employment, or their responses. The data will be used to inform the Tennessee Board of Regents (TBR) and each TCAT location of instructor training and professional development strengths, weaknesses, and needs to better support faculty.

I thank each of you in advance for your willingness to assist me in my dissertation endeavor and look forward to your responses. If you have any questions, please do not hesitate to contact me directly through email.

Best,

Sarah Nadel
snadel@utk.edu

Faculty Supervisor:

Dr. Jennifer Ann Morrow
Evaluation Statistics and Measurement Program
University of Tennessee
jamorrow@utk.edu

Appendix H: TCAT Recruitment Flyer



TCAT Instructor Training Survey

-Purpose: To assess instructor training needs, strengths, and suggestions for improvement for instructor training across all TCAT locations.

-Who Should Participate: ALL Instructors at ALL TCAT locations.

-What Do I Have To Do: You will be asked to respond to statements and questions in an anonymous online survey. The survey will take you no more than 15 minutes to complete.

-Importance of Survey: Your feedback is crucial to your own professional development. Let your voice be heard and help further improve TCAT instructor training now and in the future!



-How to Participate: Use a QR reader and click on the QR code or go to <https://tcatinstructorsurvey.questionpro.com>

Appendix I: TCAT Informed Consent

Consent for Research Participation

Research Study Title: Supporting Technical College Instructors: An Assessment of the Professional Development Needs of Tennessee College of Applied Technology Instructors

Researcher(s): Sarah A. Nadel, University of Tennessee, Knoxville

Dr. Jennifer Ann Morrow, University of Tennessee, Knoxville

I/We are asking you to be in this research study because you are a TCAT instructor. You must be age 18 or older to participate in the study. The information in this consent form is to help you decide if you want to be in this research study. Please take your time reading this form and contact the researcher(s) to ask questions if there is anything you do not understand.

Why is the research being done?

The purpose of the research study is to assess the instructor training needs, strengths, and suggestions for improvement for instructor training across all TCAT locations.

What will I do in this study?

If you agree to be in this study, you will complete an online survey. The survey includes questions about the instructor training you have received while employed at TCAT, any instructor training you have received from other institution, and your suggestions to improve current TCAT instructor training methods and should take you about 15 minutes to complete. You can skip questions that you do not want to answer.

Can I say "No"?

Being in this study is up to you. You can stop up until you submit the survey. After you submit the survey, we cannot remove your responses because we will not know which responses came from you.

Are there any risks to me?

We don't know of any risks to you from being in the study.

Are there any benefits to me?

There is a possibility that you may benefit from being in the study, but there is no guarantee that will happen. Possible benefits include more profession development opportunities for you and other TCAT instructors and an increase in professional development resources. Even if you don't benefit from being in the study, your participation may help us to learn more about TCAT instructor professional development needs. We hope the knowledge gained from this study will benefit others in the future.

What will happen with the information collected for this study?

The survey is anonymous, and no one will be able to link your responses back to you. Your responses to the survey will not be linked to your computer, email address or other electronic identifiers. Please do not include your name or other information that could be used to identify

you in your survey responses. Information provided in this survey can only be kept as secure as any other online communication.

Information collected for this study will be published and possibly presented at scientific meetings.

Will I be paid for being in this research study?

Possible participants will be entered into a raffle to win 1 of 10 \$25 Amazon gift cards. You have a 2% chance of winning 1 of the 10 Amazon gift cards. Your participation is not required to win one of the gift cards. You are eligible for a chance to win a gift card if you are age 18 or over. The winner will be randomly selected and contacted by email on how to claim their prize.

Who can answer my questions about this research study?

If you have questions or concerns about this study, or have experienced a research related problem or injury, contact the researchers, Sarah A. Nadel at snadel@utk.edu or 614-357-2393 or Dr. Jennifer Ann Morrow at jamorrow@utk.edu.

For questions or concerns about your rights or to speak with someone other than the research team about the study, please contact:

Institutional Review Board
The University of Tennessee, Knoxville
1534 White Avenue
Blount Hall, Room 408
Knoxville, TN 37996-1529
Phone: 865-974-7697
Email: utkirb@utk.edu

Statement of Consent

I have read this form, been given the chance to ask questions and have my questions answered. If I have more questions, I have been told who to contact. By clicking the “I Agree” button below, I am agreeing to be in this study. I can print or save a copy of this consent information for future reference. If I do not want to be in this study, I can close my internet browser.

Vita

Sarah Alese Nadel earned a Bachelor's degree in Psychology from Northern Kentucky University (Highland Heights, KY) in 2009. In 2012, she began the Quantitative Research, Evaluation, and Measurement masters program at The Ohio State University (Columbus, OH) and graduated in 2014. In 2014, she joined the Evaluation, Statistics, and Measurement doctoral program at the University of Tennessee (Knoxville, TN). During her first year within the program, Sarah worked as a graduate research assistant within the Office of First-Year Studies. During her 2nd and 3rd year within the program, she served as a research assistant within the Office of Institutional Research and Assessment (OIRA). Within each of her graduate research assistantships, Sarah performed various tasks that focused on statistical reporting, evaluation, and measurement that focused on various topics within higher education. Sarah partnered with technical college institutions to conduct various assessments, evaluations, and survey development to assess diverse aspects of student and instructor success within technical colleges. Furthermore, Sarah was able to create and establish an employee satisfaction survey for a division within the US Department of State. Sarah authored and coauthored evaluation reports and journal publications, regularly presented at national conferences, and gained skills within qualitative and quantitative data analyses, research methods, and survey research. Sarah works as a survey researcher for the College and University Professional Association of Human Resources (CUPA-HR) in Knoxville, TN. Sarah Nadel graduated from the University of Tennessee in December 2019 with a Ph.D. in Educational Psychology and Research, with a concentration in Evaluation, Statistics, and Measurement.