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REACHING THE FINISH LINE:

ADULT STUDENTS PERSPECTIVES ON CHALLENGES IN PERSISTING IN AN AVIATION CAREER TECHNOLOGY PROGRAM

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REACHING THE FINISH LINE:

ADULT STUDENTS PERSPECTIVES ON CHALLENGES
IN PERSISTING IN AN AVIATION CAREER TECHNOLOGY PROGRAM

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL LEADERSHIP AND POLICY STUDIES

BY THE COMMITTEE CONSISTING OF

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Dedication

This dissertation is dedicated to my amazing husband who without his unwavering support and unconditional love I could not have completed this journey. Thank you for always being my biggest fan and for always believing in me.

Also, to my children and grandchildren who I hope to always make proud. I love you all!

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Table of Contents

Dedication iv

Acknowledgement v

Table of Contents vi

List of Tables x

List of Figures xi

Abstract xii

Chapter One: Introduction 1

Career Technology Overview 3

Background of Career Technology Education 5

Statement of the Problem 6

Purpose of the Study 8

Research Questions 10

Theoretical Framework 11

Significance of Study 13

Rationale 14

Definition of Terms 14

Limitations 15

Summary of the Chapter 16

Chapter Two: Literature Review 18

Theoretical Framework 19

Tinto's Model of Student Retention 19

Academic Integration 20

Social Integration 21

Institutional Commitment 24

History and Overview of Career and Technical Education 26

Aviation Program Requirements 28

Characteristics of Adult Students 29

Aviation Retention 31

Barriers to Retention 32

Personal Barriers 33

Institutional Barriers 35

Systemic Barriers 36

Summary and Gaps in the Literature 38

Chapter Three: Methodology 42

Introduction 42

Research Questions 43

Research Design 44

Setting and Participants 45

Data Collection Methods 47

Data Analysis Procedures 49

Role of the Researcher 53

Trustworthiness and Rigor 54

Ethical Considerations 56

Limitations 56

Chapter Summary 57

Timeline of the Study....57
Chapter Four: Findings....59
Introduction....59
Data Collection Methods....59
Data Analysis Process....60
Description of the Case....63
Description of the Participants....65
Presentation of Findings....69
Theme 1: Long-Term Career Goals and Interest in Aviation....71
Theme 2: Curriculum Rigor and Program Structure....73
Theme 3: Positive Instructor Interactions and Hands-On Learning....75
Theme 4: Family Influence and Support....78
Findings Summary....83
Chapter Five: Discussion of Findings....86
Summary of Study....86
Review of the Findings....87
Alignment of Findings to Research Questions....91
Interpretation of the Findings....96
Implications for Practice....104
Theoretical Implications....107
Recommendations for Future Research....108
Limitations of the Research....109
Conclusion....110

References.....112

Appendix.....125

Appendix A: Interview Protocol.....125

Appendix B: Recruitment Flyer.....130

Appendix C: Institutional Review Board (IRB) Letter.....131

Appendix D: Coding Map of Analysis and Categories 133

Appendix E: Final Thematic Development from Codebook……...134

LIST OF TABLES

Table 1: *Description of Participants De-Identified Information* *65*

Table 2: *Final Themes Summary* *69*

Table 3: *Research Questions and Theme Alignment* *81*

Table 4: *Triangulation Data Sources* *83*

LIST OF FIGURES

Figure 1: *Educational cycle using Tinto's model of student retention* *23*

Figure 2: *Example of the thematic map that was used during data analysis*.....*52*

Abstract

Career technology education plays a significant role in training students for skilled trade jobs that support the local, state, and national economic workforce. Adult students have non-traditional challenges that can impact their ability to complete a program in which they enroll. Specifically, adult students enrolled in aviation programs have unique barriers and challenges that can affect their ability to persist. There are not enough students completing the aviation curriculum and becoming certified airframe and powerplant mechanics compared to the job openings for that career pathway. This qualitative, bounded case study examined the challenges experienced by adult students enrolled in an aviation career technology program so that educational institutions and career technology centers can understand what barriers adult students encounter while enrolled. The main research question for this study looked at the perspectives of adult students enrolled in an aviation career and technology education, as well as the institutional and personal challenges the students face in completion of the program. The methodology for this study utilized one-on-one interviews of adult students enrolled in an aviation program at an Oklahoma City Metropolitan area career technology center. Tinto's model of student retention was the framework used as the lens for data collection and analysis, along with understanding how student integration, institutional commitment, and support services impact student completion rates. Thematic analysis and coding were used to analyze the data obtained from the semi-structured interviews. The information obtained from this study can help career technology organizations change practices and guide strategic planning processes to increase adult student completion and retention rates.

Keywords: Tinto’s model of student retention, career technology, aviation, persistence

Chapter 1: Introduction

Career and technology education has been a vital component in helping address workforce shortages in the American economy since its creation and has been a primary vehicle for training skilled workers to support the United States workforce since the 1960s. Career and technology education is an educational pathway for students to receive technical and real-world skill training to prepare for many different career opportunities (Association of Career Technical Education, 2025).

With the lack of skilled workers in many critical occupation areas, such as the aviation field, there is a significant need to address this deficit. There are over 700,000 aircraft technicians who will need to be available to support industry needs worldwide over the next twenty years (Boeing, 2024). Currently, there are seventeen million skilled workers in the United States, and over three million openings for prospective skilled workers in all areas (Kalejaiye, 2023). Many of these in-demand skilled workers receive technical training within the career technology education system. More than 489,000 people were enrolled in career technical training courses in 2023 in the state of Oklahoma alone (Oklahoma Department of Career and Technology Education, n.d.). Having skilled workers to support industry needs requires the training that career and technology center education provides.

The aviation sector is the second-largest economy in the state of Oklahoma (Oklahoma Department of Aerospace and Aeronautics, n.d.). Globally, aviation supports 86.5 million jobs, and the direct economic impact of the aviation industry is approximately 4.1 trillion dollars and a gross domestic product (GDP) of 3.9% (Air Transport Action Group, n.d.). It is expected that there will be over 11,000 aviation mechanics job openings annually over the next decade due to demand and the number of current mechanics retiring (Bureau of Labor Statistics, 2025). This data illustrates the importance of producing trained aviation mechanics to be available for

workforce demands. Lack of completion of aviation training programs within the technology center system lessens the number of aviation mechanics available to fill the openings needed to sustain business and industry, and affects economic development. With the potential economic impact and the need for mechanic jobs, the focus of this study was on examining the perspectives on challenges to adult students enrolled specifically in an aviation program at a career technology center that might prevent them in persisting in completion of the program.

Oklahoma has five career technology centers that offer Federal Aviation Administration Part 147 Airframe and Powerplant specific training for aviation mechanics (Aviation Technician Education Council, n.d.). These programs are rigorous and intensive, spanning approximately eighteen months, and usually require the student to attend full-time. The aviation program at the technology center, for which the study was conducted, only had 17 students complete the aviation program in 2024 (Hawk B., personal communication, June 16, 2025). The number of graduates from these programs falls short of the number needed just to maintain the current level of skilled workers to support the local, state, and national aviation economy.

Adult student learner participation in career technology education in Oklahoma has averaged around 30,000 students per year (U.S. Department of Education, Office of Career, Technical, and Adult Education, n.d.). More female students have participated in CTE courses over the last five years than male students in Oklahoma, accounting for 58% of students enrolled (U.S. Department of Education, Office of Career, Technical, and Adult Education, n.d.). Awareness of this data is critical to understanding who CTE learners are.

While Adult Learning Theory is not the theoretical framework that will be used for this study, it heavily influences this study and assists in understanding the role of adult learners, who are the focus of this study. Adult motivation is directly tied to why the adult student is learning about something, so maintaining relevance is a key component to facilitating successful learning

outcomes (Clair, 2024). This theory is based on educational experiences being learner-centered, which assists in organizational strategic planning for both curriculum and program alignment. Using this novel combination of Tinto's model of student retention and Adult Learning theory led to informing this research study.

When examining the adult student population, which has unique experiences in pursuing higher educational training (Merriam, 2018), a lack of completion of the aviation program career technology was discovered (Hawk B., personal communication, June 16, 2025). Since there is limited qualitative research on adult students' experiences within aviation programs in the career technology system, exploring the factors and potential barriers that contribute to an adult student's lack of retention or completion of the aviation career technology center program should be examined. These challenges could range from scheduling issues, familial obligations, or financial issues, but more research needed to be done to identify what specific factors are impacting adult aviation students.

There is a significant gap in the literature regarding adult aviation students' voices, and considering feedback and responses from these students is vital in improving retention and completion rates. By understanding the challenges adult students encounter when completing a career technology aviation program, the technology system organization can frame its strategic planning around potential solutions to address the barriers adult students experience that affect their ability to complete.

Career Technology Overview

Career technology education was established one hundred years ago, with twenty-nine career technology center sites serving thousands of students (Oklahoma Department of Career and Technology Education, n.d.). Over 489,000 people participated in career technology education training in FY2023 in Oklahoma (Oklahoma Department of Career and Technology

Education, n.d.). This training occurs not only at career technology centers but also in K-12 districts. The fiscal influence of these graduates who are trained to work in the aviation industry is tremendous. Oklahoma Career Technology students have over a two-billion-dollar economic impact on the state of Oklahoma's economy (Oklahoma Department of Career and Technology Education, 2024). Thirty-eight percent of the entire population of Oklahoma resides in the metro area, and there are currently 115,000 job openings in Oklahoma (U.S. Bureau of Labor Statistics, 2024). These numbers emphasize the importance of skilled workers supporting industry demands.

Aviation career technology center training serves primarily adults, but does have some modified programs that incorporate aspects of the adult aviation program for high school students. The programs high school students enroll in are introductory programs and do not encompass the entirety of the adult aviation programs (Hawk B., personal communication, June 16, 2025). Each of these groups has unique challenges when participating in career training programs and has different experiences and responsibilities that affect their educational experience. According to research, some of the barriers adult students face are time management, lack of self-confidence, and financial barriers (Malhotra & Apicerno, 2023). These barriers can be experienced individually or as a combination of barriers. Many institutions are not equipped to adequately address the specialized support adult students need to be successful (Fincher, 2010). That is why it is important to understand the learning experiences of adult students to properly offer nurturing, successful learning environments for adult students to succeed.

For this study, an exploration of the specific retention and completion challenges attributed to adult learners was observed. Adult students were interviewed to gain information on their perspective of what challenges have impacted their educational experience. Identifying and addressing the barriers adult students face when completing a technology center program can

provide more trained, skilled workers available for workforce development. Also, understanding how barriers impact adult students can lead to systemic changes that could increase retention and completion rates for adult students.

Background of Career Technology Education

In the primary expansion and initial structure of the educational system, the government recognized a necessity to not only deliver academic instruction for its citizens but also the need for the training of skilled workers (Association for Career & Technical Education, 2022). The National Vocational Act of 1917 was founded to help facilitate funding for organizations to support educational training for skilled workers to address critical occupation areas needed at the time (Association for Career & Technical Education, 2022). Funding has evolved substantially throughout the years.

In 1984, career technology education legislation was officially named the Carl D. Perkins Vocational Act (Association for Career & Technical Education, 2022). With the training now under the Carl D. Perkins Act, funding became entwined with accountability and outcomes (Association for Career & Technical Education, 2022). The expansion of business and industry partnerships increased considerably during the 1980s, focusing more on training students as efficiently as possible to go directly to the workplace.

Many people are familiar with the term vocational education. However, in 2006, this term was no longer used in the Carl Perkins Act, and the system was renamed Career and Technical Education or CTE, shifting to more local control so that career technology centers could focus their programs to fit their local industry partners' needs (Association for Career & Technical Education, 2022). This transference and increased building of business relationships moved to the forefront of strategic planning goals for the career tech system. The Oklahoma Department of Career and Technology Education system has created partnerships with approximately 8700

businesses (Oklahoma Department of Career and Technology Education, n.d.). The Oklahoma Department of Career Technology Education aims to increase the number of students enrolled in technology center programs by 15% in the next five years (Murphy, 2024). This is why career technology centers are focused on increasing the number of students who complete programs, which is integral to economic support.

This chapter of the study discusses the significance of understanding adult students' perceptions of the challenges they face when completing career technology programs. Also, this chapter further explains the importance of having adult students complete career technology programs and be available for workforce needs in the local, state, and national economy. Next, this dissertation study outlines the research questions this research addressed regarding adult student perceptions and how they impact the adult students' ability to persist in their program. The theoretical framework, Tinto's model of student retention, is introduced to provide a framework for the lens that was used to analyze the data and inform the research. A definition of terms for the reader is given to better understand any unfamiliar terms discussed in the research discussion. Also, limitations and a summary of the chapter is provided.

Statement of the Problem

Adult students face obstacles when enrolled in an aviation program on their journey to completion, but the data directly from adult students on their perspective regarding barriers to retention has not been comprehensively understood. Our current economy is facing labor shortages, and not enough skilled workers available to fill the vacancies (Costanza et al., 2023). Data indicate that 35 % of the aviation workforce is at or approaching retirement age (Costanza et al., 2023). The twenty-nine career technology centers are a primary vehicle for the delivery of skilled training opportunities. Adult students who complete aviation career technology center

programs can potentially address the lack of available skilled workers and support workforce development.

Students who participate in career technology training programs add over 2 billion dollars annually to the state's economy (Oklahoma Department of Career and Technology Education, 2024). Adult students receive skilled training at career technology centers, but must complete it at a higher rate to keep up with workforce demands. There are fewer people completing vocational or higher education training than there are job openings (Oklahoma Office of Workforce Development, 2019). With research and statistical data showing a deficit in available workers in high-demand areas such as aviation, an investment in the retention of students enrolling in credentialing programs was explored further.

Adult student retention in career technology center programs is not producing an adequate number of skilled workers that the workforce needs to support and sustain our current economy in Oklahoma and globally (Gordon, 2013). Even though more people are beginning to understand the importance of skilled training opportunities, many students are still enrolling in career training programs only to drop out or not complete them for many reasons (Gordon, 2013). Increasing the number of skilled workers available to businesses and industries is vital because of the generational transition that is taking effect with all the Baby Boomers nearing retirement (Gordon, 2013).

When seeking to address the lack of adult retention in aviation career technology center programs, we must first understand the barriers contributing to a lack of completion. Some of the barriers identified from research are institutional, internal and external factors (Falasca, 2011). When institutions identify specific situations and barriers their students are experiencing, interventions and resources could be implemented to increase the number of adult students completing programs and obtaining full-time employment in industry.

Currently, when looking at the existing literature on adult student retention, most of the research is focused on higher education retention, and very little research exists regarding retention and completion rates in the career technology education system, and more specifically, regarding aviation program retention rates. Although there are many similarities in adult students who attend both higher education and career technology education programs, there are differences that need to be further explored. This gap in the literature reinforces the need for specific research on adult students in aviation career technology education programs and their perceptions of the challenges they experience when attending their career technology program.

Purpose of the Study

With the increased need for skilled workers to support the state economy, this qualitative, case study research aimed to understand the personal, institutional, and socio-economic lived experiences that affect an adult student's ability to persist in an aviation career training program. This study identified and recognized individual student barriers and affecting persistence in completing an aviation technology center program to identify the potential for systemic and policy changes. The participants who were interviewed for this study were adults enrolled in an aviation program at a technology center in the Oklahoma City Metropolitan area which has a high rate of lack of retention and completion for this specific program (Hawk B., personal communication, June 16, 2025).

The district serves over 2,000 students each year and the demographic data for this district are 62%- Caucasian,14 % -Hispanic, 12% American Indian, 6 %-African American, and 3.7 %-Asian (Oklahoma Department of Career and Technology Education, 2025). Most students who attend this organization are high school students, but approximately thirty-five percent are adult students (B. Hawk, personal communication, June 25, 2024).

Adult students for this study were defined as students who had graduated from high school, were at or above the age of 18, and who were enrolled in the aviation career technology program at the technology center being observed. Utilizing a case study approach, the researcher utilized semi-structured interviews, observation, and document analysis to collect data. The sample for this study consisted of approximately nine students, and thematic analysis was used after the interviews were completed. Generally, it is suggested that 10-50 participants should be considered for a data pool, depending on the research question (Crestwell & Crestwell, 2018). Since the participation was voluntary, nine participants were all the researcher were able to obtain. There were approximately 39 students enrolled in the aviation program classified as adult students, with half being new enrollees. Identifying elements affecting retention can allow for the development of the organization's strategic plan for different ways to support and nurture the educational pathway of adult students.

Career technology system leaders and policymakers need to be aware of adult students' challenges so that legislation, allocation of funding, and implementation of resources can be made available to resolve these issues. Currently, the state legislature is focused on setting aside funding to ensure career technology centers are used to address critical shortage occupation areas in the state to increase the number of skilled workers produced for industry needs (Patzkowsky et al. Bill, n.d.). More funding for technology centers can create opportunities for more program seats. This will allow for higher enrollment numbers and potentially increase student completers.

By understanding the factors that are contributing to the lack of completion of programs, organizational and systematic changes could be implemented to address the elements affecting adult students' educational experiences. If the career technology system were able to identify these challenges, there may be institutional changes that could be enacted to better support adult

completion rates, which could then directly impact the availability of skilled workers to support workforce development needs.

Research Questions

Understanding and identifying barriers and intervention processes for adult students completing the aviation career and technology program at a metropolitan career technology center can assist career technology center personnel and instructors in ways that best support adult student retention. To better understand challenges adult student experience while enrolled in a career technology program, this research focused on answering the following research question:

RQ1: What are the perspectives of adult students enrolled in an aviation career and technology education on the institutional and personal challenges they face in completion of the program?

Some other secondary questions that were explored during the data collection process were:

RQ1a: What academic, institutional, or personal challenges do adult students experience?

RQ1b: How do external factors (transportation, family, finances) influence decisions to stay in the program or not?

RQ1c: What strategies do adult students use or feel are helpful? Support structures/systems, etc.?

The development of the research questions for this study was guided by the theoretical frameworks focus on how institutional changes can affect student persistence.

The methodology used to analyze the data from this research was thematic analysis. The researcher identified recurrent themes and patterns in the data gathered from adult students interviewed for this research. Yin's Case Study Analysis Framework was used as a guide with manual coding to help in identifying sub-category themes, such as internal and external barriers,

differences between male and female students' perspectives, as well as using triangulation of data from interviews, document analysis, and observations conducted. Yin's Case Study Analysis Framework uses logic models along with pattern matching in the organization of thematic analysis (Hollweck, 2015). Braun and Clarke were also the model used to guide the thematic analysis process.

Theoretical Framework

Tinto's Model of Student Retention

The goal of this study was to examine adult students' perceptions of challenges in completing their technology center program and what potential barriers those students experience that may prohibit their retention and completion of an aviation career technology program. The theory that most appropriately helped to guide this research and give a roadmap for the aims of this study was Tinto's model of student retention.

Adult learners are unique in their educational experiences (Merriam, 2018). Tinto's model of student retention was critically important for conceptualizing adult learners' experiences so that the exploration of barriers adult students experienced in their learning pathway was more comprehensively understood and evaluated. This theory helps organizations to understand why students leave their educational program so that retention supports can be created to encourage student persistence (Fincham et al., 2021). Tinto's model focuses on academic integration, social integration, and institutional commitment (Fincham et al., 2021). Program structure, student support systems, and factors that impact persistence are fundamentally essential to the goals of this study, which is to understand why adult students may not complete aviation career technology programs and the long-term impact that has on economic and workforce development.

Tinto's theory of student retention helps to understand how program experiences and the learning environment affect the retention and persistence that adult students experience (Fincham et al., 2021). These factors can contribute to students having a difficult time connecting back into the learning environment. Using this theoretical framework as a lens to analyze the data gathered from this qualitative study helped to better comprehend the thematic results garnered during this process.

A significant number of adults who are enrolled in career technology center programs are there to learn a skill as fast as possible so they can enter the workforce. They have many responsibilities that affect their ability to be successful. If adult students do not feel a connection to what they are learning, they can become discouraged (Merriam, 2018). They thrive in a self-directed learning environment, meaning the learner has some control over what and how they learn (Merriam, 2018). Utilizing this theory as a framework for understanding the complexity of adult student learners in relation to institutional fit helped in explaining the unique challenges experienced by adult students when returning to the learning environment and can help with organizational obstacles that may contribute to a lack of retention and completion for adult students.

In the prevention of adult students dropping from career technology programs, it is imperative to understand elements vital to learner success. The student's academic integration and ability to be successful and feel a sense of belonging can make the difference between completing a program and giving up (Davidson & Wilson, 2013). Knowing the students' needs can give the organization the needed data to implement successful support services.

Social integration, a sense of belonging, and student relationships with their instructors and peers can influence student persistence. Many students have outside responsibilities, such as families and jobs, that make their learning route untraditional (Fincham et al., 2021). Tinto's

theory of student retention was particularly relevant to the goals of this study, as institutional processes, academic and social integration, persistence, and barriers students experience can directly affect the completion of their training program (Fincham et al., 2021).

Significance of the Study

As the industry struggles to employ the number of skilled workers needed to fill critical occupation areas, career technology centers aim to encourage and support more skilled, trained workers available for workforce development needs (Haviland & Robbins, 2021). The data on open vacancies of over seven million jobs needed to be filled by skilled workers suggests a need for more people to be prepared to fill the needed gaps (U.S. Bureau of Labor Statistics, 2025). To increase this number and the number of aviation students completing aviation programs, career technology centers needed to examine why adult students enrolled in aviation career technology programs do not complete, so that institutional support and interventions can be provided to encourage a greater number of graduates from training programs.

This study aimed to understand the barriers and challenges adult students face and can potentially give empirical data for the career tech systems to implement support and resources for adult students enrolled in aviation career technology programs. Identifying factors that could potentially affect student persistence and addressing those elements can increase individual student success in completion of the program, as well as create more aviation mechanics to fulfill vacancies for workforce development.

Several research studies have explored adult student retention and persistence in the higher education setting, but there was minimal research regarding adult students enrolled in career technology programs, and even more specifically in aviation programs. While adult learners in both educational systems have similar challenges and learning obstacles, there are differences that make this research distinctive and provide beneficial data that can shape

leadership decision-making and policy implementation and impact the local, state, and national economy.

Rationale

This study followed a qualitative case study approach concerned with adult students lived experiences while attending the aviation program at an Oklahoma City metropolitan career technology center. Acknowledging the human elements and experiences of students, challenges they experienced and why they choose to stay was central to the purpose of this study. A case study is the most applicable method for this research, as understanding the specific challenges and perspectives of students within the aviation program helped to understand and identify challenges adult students experience.

With adult completion numbers not where they need to be to provide adequate support for workforce development, identifying these barriers and potentially finding solutions can impact the availability of skilled workers to support the economy. Integrating thematic analysis provided a more holistic perspective on addressing barriers that impact adult student completion rates.

Definition of Terms

The following terms are used throughout the study to give better understanding to the examination of the phenomenon being assessed.

Adult Student: A student who is considered an adult student over the age of 18, enrolled in a learning environment (Kapur, 2015).

Aviation Program: A career technology program that trains adult students to become licensed airframe and powerplant (A&P) mechanics (*Aviation Maintenance Technology - CV Tech*, 2024).

Career Technology Education: An Educational system that provides specialized academic and technical training to prepare students for the workforce (ACTE Online, 2025).

Completion Rates: Number of students who stay and complete the entire career technology program (*CTIMS (CareerTech Information Management System)*, n.d.).

Course Concentrator: A student who stays for a portion in excess of 60 hours, but does not complete all required hours for the program (*CTIMS (CareerTech Information Management System)*, n.d.).

FAA Certification: Federal Aviation Administration verification that a person is fully trained to work on aircraft (Federal Aviation Administration, 2022).

Persistence: The need to achieve a goal or the drive to complete a task (Styk et al., 2023).

Positive Placement: Data measurement for students who obtain employment in a related career field or pursue higher education or military training (*CTIMS (CareerTech Information Management System)*, n.d.).

Student Retention: Student retention is the percentage of students who enroll and complete a career technology training program through graduation from the program (Oklahoma Department of Career and Technology Education, n.d.).

Limitations

This study had potential limitations that may prohibit the results from being generalized for analysis for future research. This study only examined adult students. The results from this study cannot be directly attributed to high school students' experiences or retention and completion rates. Also, the data was self-reported through interviews with students, so there is an assumption that the students were being truthful and that the data gathered from the one-on-one interviews did accurately reflect the students' actual, authentic experiences.

In addition, this research focused on students in a specific program at one technology center. Only looking at one geographical area or site may not be transferable to another area within the state or other parts of the country. Future research may seek to examine high school student experiences and student experiences from other geographic regions to more holistically explore the comprehensive experience of the career technology student, along with other programs or career clusters within the career technology system. However, due to the projection for the demand of aviation job opportunities over the next decade and aviation being a high-demand occupation area with a high dropout rate, focusing research on this specific program was highly relevant.

Summary of the Chapter

The barriers impacting adult student completion of aviation career technology programs have a far-reaching influence on workforce development and the local, state, and global economies. Defining the obstacles that affect adult students can permit organizational and institutional changes that might enhance student experiences and increase retention rates.

Although there is a significant need for aviation mechanics in the workforce, challenges exist that are impacting adult students' ability to complete aviation programs. Tinto's model of student retention has been used to identify and understand retention in the higher education system; however, there is minimal literature and research related to its application to career technology students' experiences. This lack of data presented an opportunity for this study to explore these factors so that institutional and systematic support systems can be implemented within an organizational structure.

The next chapter of this study will be a literature review examining research that seeks to provide a comprehensive perspective on adult learning and challenges that affect completion rates, and the economic impact a lack of skilled workers has on the economy. A thorough

examination of the literature related to Tinto's model of student retention was done, along with a review of relevant literature related to the history of career technology education, the characteristics of adult students, barriers to retention and gaps in the research.

Chapter 2: Literature Review

Finding ways to increase students' retention and completion rates in career technology training programs has become critical to supporting occupations requiring skilled workers. As the need for skilled workers to support economic workforce development has increased, the support and encouragement of the organization that provides the training for these workers and career technology education has become a vital component in the business and industry sector.

Although employment opportunities exist for these students, retention and completion rates are not at the level needed to support workforce demands sufficiently (Follow-Up, 2023). Solutions to producing more skilled workers for the job opportunities in these critical occupation areas fall primarily to the career technology education system. Student completion rates are measured by the Oklahoma State Department of Career Technology Education as a measure of the local technology center through the Career Technology Information Management System (CTIMS) follow-up reporting (Follow-Up, 2023). Additionally, understanding the many barriers contributing to a lack of retention and completion of career technology education is critical to increasing completion rates in technology center programs.

The purpose of this chapter was to review past and current literature investigating the experiences of adult learners, the historical development and background of career and technical education, specifically the aviation program, characteristics of adult learners, barriers to completion of programs, and career technology education's role in preparing skilled workers for workforce development. To most accurately understand adult learners' experiences and why students do not complete or stay in their chosen program, it is important to look at internal, external, and systemic factors that directly impact adult students. Although there is not much research specifically on challenges to completing aviation programs in the career technology

system, there is research on this topic, centering on adult education, retention, and career technology support of workforce needs.

This literature review synthesized the literature surrounding adult students in career technology education and began by introducing the theoretical framework that guided this study: Tinto's model of student retention, which viewed the research through a lens focused on institutional practices affecting student retention. Next, the discussion centered on adult learners' motivation for enrollment and barriers that are faced explicitly by adult students. This chapter also provides background on career and technical education and provides an overview of aviation programs in the career technology system. The barriers examined explicitly for this study were academic integration, social integration, institutional commitment, psychological factors, and the impact of self-efficacy on adult learners as a secondary perspective to better understand adult learners, not a guiding framework.

Since little to no information specifically related to the aims of this study exists, this study provided an opportunity to address a significant gap in the literature regarding adult student perceptions of challenges faced while enrolled in an aviation program. Because aviation is considered a critical occupation area, examining the factors surrounding retention of these programs can potentially contribute to institutional and systemic changes. Gaps in the literature surrounding this topic were also discussed.

Theoretical Framework

Tinto's Model of Student Retention

Tinto's model of student retention was developed by Vincent Tinto in 1975 and later updated in works written in 1993, 1997, and 2012. This model proposed that student persistence is determined by how much the student integrates academically and socially into their educational setting (Tinto, 2012). The three main components of this theory are academic

integration, social integration, and institutional commitment (Tinto, 2012). Students come to educational settings with pre-existing experiences and backgrounds that shape the reasons why they attend school and how committed they are to attending. This theory was the lens through which the data gathered from this study was viewed, analyzed, and interpreted.

Academic Integration

Academic integration is a key component of Tinto's model, and focuses on a student's ability to be successful in the academic curriculum and ensure that their academic needs are addressed (Tinto, 1975). Academic-centered experiences have a profound impact on a student's ability to persist. Even though Tinto used the term academic integration to describe this part of the theory, a study by Osborne and Jones (2011) found that the term academic identification was more accurate than integration, as students use learned strategies to feel accomplished and to create their school identity. Some factors that described academic integration are: relationship with the instructor, curriculum, GPA, prior academic successes or failures, and support systems (Qvortrup & Lykkegaard, 2022). A student feeling connected to their program would fall under this module of the theory (Eegdeman et al., 2025). Connectedness can lead to more positive experiences in the classroom setting.

Tinto's student retention model emphasizes student retention and persistence when students are in an educational setting and is one of the most widely used theories in understanding student educational experiences (Fincham et al., 2021). This theory emphasizes two main areas: academic integration and social integration into a higher education setting with the goal of explaining persistence and lack of completion (Fincham et al., 2021). This theory can be tremendously beneficial in identifying barriers to adult student learning by looking at students' academic and social experiences when attending career technology programs. Many times, the

emphasis is on the action of the student leaving a program, when in actuality that choice could be a positive step in the student's long-term goals (Tinto, 2012).

In order to prevent adult students from dropping out of career technology programs, it was imperative to understand the elements vital to learner success. The student's academic integration and ability to be successful and feel a sense of belonging can make the difference between completing a program and giving up (Fincham et al., 2021). Tinto's model focuses on understanding an institution's role in influencing students' social and academic development (Tinto, 2012). Knowing the students' needs can give the organization the needed data to implement successful support services. Tinto's theory relies on the belief that "if there is a secret to successful retention, it lies in the willingness of institutions to involve themselves in the social and intellectual development of their students" (Tinto, 2012, p. 6).

Social Integration

Tinto's student retention model is considered a temporal process and is widely affected by contextual factors that affect student motivation over time (Fincham et al., 2021). Student persistence and factors that impact that persistence were fundamentally essential to the goals of this study, which was to understand the perspective on challenges adult students face in completing an aviation career technology program and the long-term impact that has on economic and workforce development.

Social integration and student relationships with their instructors and peers can influence student persistence. Many students have outside responsibilities, such as families and jobs, that make their learning route untraditional (Fincham et al., 2021). This theory was particularly relevant to the goals of this study, as student persistence and barriers students experience directly affect the completion of their training program.

Understanding how adult students learn and their motivation for enrollment in the program and psychological needs adult students experience when attending career technology center programs can help assist organizations to address the lack of retention and completion rates. A student's commitment is constantly changing and being modified by the interactions with both the academic and social environments of the educational institution (Fincham et al., 2021). Tinto's model of student retention gives educational institutions a set of actions and a roadmap that can be tailored to the needs of the institution, as no two organizations or situations are the same, and there is not one specific formula that works for everyone (Tinto, 2012).

Other studies, such as one done by Lepper et al., theorized that individuals relate their successes to intrinsic factors and any failures to extrinsic factors like bad luck (Lepper et al., 1973). Tinto's model focuses on how individuals and their academic, personal, and institutional experiences can shape and determine outcomes (Tinto, 1975). This model holistically looks at the student's prior experiences, personal commitments, and institutional factors that directly impact the persistence of student completion (Tino, 2012).

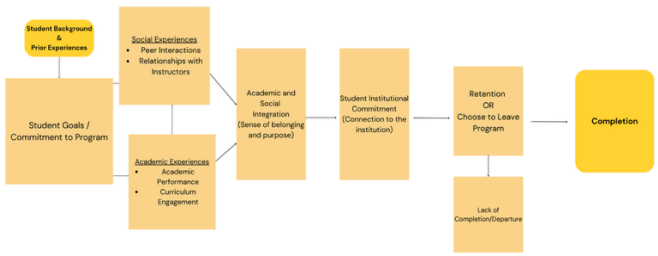
There are two prevailing bodies of research that have been the most prevalent when discussing retention studies: Tinto's model of student retention, focusing on academic and social integration, and Bandura's self-efficacy (Zak-Moskal & Garrison, 2020). While these two areas provided much-valued data and background in the study of student retention, the focus of this study was on academic integration, personal integration, institutional commitments, student persistence, and personal sense of self. While self-efficacy focuses on a sense of belonging, Tinto's model understands that creating targeted support systems for individual student needs can encourage student persistence (Tinto, 2017).

A study by Rogerson and Poock found that having a freshman seminar class and getting new students connected to other students increased retention rates (Rogerson & Poock, 2013).

An additional study by Cambridge-Williams et al. (2013) found that 90% of students participating in a freshman seminar class returned for their sophomore year compared to only 78% of students who did not participate in the freshman seminar. This study looked at several years of data, and the trends showed increases in retention rates. These studies both show how institutional support services can increase retention rates for students. The graph below illustrates the educational cycle in relation to Tinto's model of student retention to provide a visualization of the process.

Figure 1

Educational cycle using Tinto's model of student retention



Note: Author's illustration on Tinto's model of student retention. Own work.

Concerning career technology center enrollment, adult students often start the program highly motivated to get training that will lead to a better-paying, more fulfilling career. However, when barriers or challenges present themselves, such as a lack of support, academic struggles, or personal and institutional barriers, an adult student's level of motivation can significantly decrease, which could lead to the student dropping out of the program (Qvortrup & Lykkegaard, 2022). One example of this could be a student who has academically struggled in the past and who does not understand the foundational core concepts of the curriculum, and becomes frustrated with the instructional process.

Institutional Commitment

The educational organization a student chooses to further his or her knowledge base is a critical decision. Tinto's model recognized that the institution plays a significant role in student persistence when completing an educational program. Institutional commitment is a measure of the student's individual commitment to an organization and the ability to persevere when faced with challenges (Tinto, 2012). The higher the level at which a student is committed to their goals and the institution, the more likely the student will stay and complete the program they are enrolled in (Tinto, 2012).

A study by Hovdhaugen et al.(2023) looked at students attending a nursing program using Tinto's model, and was one of the first studies to apply this model to non-traditional students in a technical education program. The study found that commitment to a chosen profession could have an even stronger correlation with persistence than to the institution, and took the term institutional commitment and changed it to professional commitment (Hovdhaugen et al., 2023). This study's findings play an important role for organizations to be aware of when advising students.

A study by Tlalajoe-Mokhatla looks at the correlation between student interactions with peers and instructors and their effect on retention rates (Tlalajoe-Mokhatla, 2024). This study also took a novel approach by merging Tinto's framework with Bandura's social learning framework to examine the results of the study. The research indicated that social learning was more linked to personal experiences of students than to institutional factors and that institutions must be cognizant of the individual needs of each student when helping students integrate into the school microcosm (Tlalajoe-Mokhatla, 2024). This research also supports that while institutional factors do affect students' ability to persist, personal and social integration cannot be ignored and must work in tandem to support student retention.

There have been some criticisms of the use of Tinto's model regarding non-traditional students. Although this model is widely used as a theoretical framework for understanding retention in higher education, there are several studies that have concerns about some of the theories related to adult learners. An early study by Bean and Metzner theorized that Tinto's model did not put enough emphasis on external factors like family and work (Bean & Metzner, 1985). The authors felt most of the data was geared more toward traditional higher education students and did not account for the unique situation adult learners have (Bean & Metzner, 1985).

Kember (1995) also took Tinto's model and went further with it by incorporating individual factors such as gender and prior life experiences, which they theorized affect adult student learners significantly, and that Tinto's model does not fully explore. Even though both of these studies criticize Tinto's model in relation to adult learners, each still used many of the design aspects of the model in the exploration of student retention. Further, a more recent critic, Mittelmeier (2025), believes the construct of integration is ambiguous and not fully explained by the model to understand persistence. However, even though criticisms exist regarding this theory, Tinto's model of student retention is still an effective and appropriate framework to view challenges to student retention and completion.

Using Tinto's model of student retention to view the academic, personal, institutional, and persistence factors of individual students can help school systems develop support systems and remediation programs once the specific factors were identified through thematic analysis of interview responses from adult students in the aviation program experiencing these difficulties. This theory helps to highlight external factors that intersect with students' psychological needs, which illuminated adult students' persistence decisions. Using Tinto's model of student retention as a theoretical lens can also enable school organizations to examine educational communities as

an additional challenge that could impact retention rates for technology center programs and make adjustments as needed.

Tinto's theory provided guidance in holistically examining the barriers that impact adult student retention and completion of the aviation technology program. After reviewing the existing literature on persistence and motivation for enrollment, multiple factors appeared to contribute to dropout rates in adult students returning to upskill or reskill in their educational journey. It was imperative to use this framework to assist in answering the evaluative research questions that were proposed for this qualitative study and to analyze and collect data pertinent to evaluating the basis for this study, as this theoretical framework focused on institutional practices, which was a primary focus for the goals of this study.

History and Overview of Career and Technical Education

Career and technical education is an integral part of the American educational landscape. There is an increased need for skilled workers to support critical occupation areas in the workforce. Approximately 17 million skilled workers are in the United States, and an additional 3.4 million are needed to address vital areas of employment (Kalejaiye, 2023). When the American education system was being developed and industrialized, the American workforce exploded, and leaders realized there was an increased need for hands-on learning opportunities (Wonacott, 2003). A solution outside of the traditional public-school environment needed to be created. In 1917, the National Vocational Education Act was created to fund states for trade and industry education (Association for Career & Technical Education, 2022). Training skilled workers was viewed as more than producing more workers; it was considered an economic resource (Wonacott, 2003). A significant emphasis was placed on theory and hands-on training.

Over the years, vocational education has gone through many different changes. In 1946, with the passage of the George-Barden Act, the government invested twenty-nine million dollars

per year in vocational educational opportunities (Association for Career & Technical Education, 2022). This investment allowed for substantial expansion of the programs offered in vocational education. After World War II, several new industries were created, and technology was taking off, so vocational education had to expand and broaden its offerings of training (Wonacott, 2003). No longer could the system just focus on training people for one specific career field or a small group of careers.

One of the most significant events in vocational education history was in 1984, when the legislation responsible for funding the system was renamed the Carl D. Perkins Vocational Education Act. Significant focus was placed on accountability and outcomes, along with curriculum alignment with secondary and higher education institutions (Association for Career & Technical Education, 2022). After the Cold War, there was a profound push to increase math and science education, and vocational education expanded again with an increase in accessibility to students outside of just high school, with adults becoming a critical component of the system's strategic planning and goals (Malkus, 2019).

In 2006, vocational education or vo-tech was renamed Career and Technical Education, and federal funding of over a billion dollars was invested in the career technology education system (Association for Career & Technical Education, 2022). This current system, or CTE as it is known, has gone through several iterations of changes to Carl Perkins funding. One hurdle the CTE system has had to overcome is the perception that career technology education outcomes would not be as lucrative as academic pathways (Wonacott, 2003). Therefore, there has been robust, intentional integration of both academic and technical training to ensure students are not put on an unsuccessful track (Wonacott, 2003).

Career technology education is more relevant today than ever. There are significant employment gaps in health careers, information technology, and manufacturing in the United

States that rely on career technology education in order to address and sustain available employability in these areas (Kotamraju, n.d.). There are 397 high schools and over 489,000 people in technical education training in Oklahoma for FY2023, and partnerships with approximately 8700 businesses (Oklahoma Department of Career and Technology Education, n.d.). These businesses struggle to find trained employees for the openings they have. Roughly sixty percent report having difficulty finding qualified applicants, which causes losses of more than $800,000 a year in productivity (Kotamraju, n.d.). These statistics highlight the potential economic impact that those connected with career technology training can have on the state economy.

The Workforce Investment and Opportunity Act (WIOA) was authorized in 2014 for federal funding to support adult basic education, such as workforce training, English language learner courses, and high school equivalency classes (Jacobson, 2017). This investment in funding explicitly geared toward adults was important because it was seen as an acknowledgment of the need to support more trained adult workers to provide support through workforce development (Jacobson, 2017).

However, even with this investment, there are significant shortfalls in students completing technology center training. The completion rate in FY 2023 at one technology center was only sixty-one percent (Follow-Up Report, 2023). Regardless of the monetary investment at the local, state, and national levels, adult students are experiencing challenges and barriers that affect their ability to complete a career technology training program and even more specifically aviation technology center programs.

Aviation Program Requirements

Most aviation programs at career technology centers are governed by the Federal Aviation Administration (FAA). The FAA puts forth regulations that stipulate what curriculum is

to be taught in an approved program. The Airframe and Powerplant Part 147 Aviation Mechanics program covers the general education curriculum requirements and the hands-on airframe and powerplant instruction for students to become A&P certified mechanics (Federal Aviation Administration, 2022). The number of hours and length of the program vary at the different technology centers, but all must include the three main sections: general, airframe, and powerplant (Federal Aviation Administration, 2022).

These topics are related to the importance of proper aviation maintenance mechanic training received by the personnel working on aircraft, be it private or commercial, and to the overall effectiveness and reliability of the aircraft people fly on every day. A ten-year study was done to look at the statistical data related to aviation safety statistics. The FAA report from that study found that 15% of aviation accidents are directly related to maintenance issues (Aviation, 2002). Also, a more recent study found that 91% of all errors in maintenance were human error (Key et al., 2022). These statistics underscore the importance of the proper training that aircraft mechanics must have in order for proper safety and workforce readiness to occur within the aerospace industry. Without adequate training, accidents can occur that can lead to catastrophic results (Aviation, 2002). Career technology centers take on the responsibility of ensuring thorough training and procedures are followed for adult students enrolled in the program by following FAA-set regulations for what a career technology aviation program curriculum should entail (Federal Aviation Administration, 2022).

Characteristics of Adult Students

Adult students are unique in their experiences and attitudes toward education. An adult is legally defined as anyone who has reached the age of majority, and for most states, that age is 18 (U.S. Legal, Inc., n.d.). Many studies have examined various ways to define an adult student. For this literature review and examination of barriers related to career technology retention and

completion, an adult student was defined as an adult who returns to school full- or part-time while maintaining responsibilities such as employment, family, and other responsibilities of adult life (Cross, 1980). This definition focused on the research questions examined by this study to identify and analyze barriers that directly impact this group of students.

Several studies seek to understand how career technology adult students differ from their K-12 or higher education counterparts. “There seems to be a general consensus in the literature on at least two common characteristics that have an impact on learning efficacy and the overall classroom experience for this mature group of students: lifetime experiences and the self-directedness of the learner” (Cook, 1993; Fisher, 1995, para 1). Self-directedness and life experiences can shape adult student experiences. Because adult learners bring unique experiences and motivations, organizations should be cognizant of these characteristics when developing systems of support to encourage student retention (Fisher, 1995).

Malcolm Knowles' book, The Adult Learner (1984) explores how adults differ from other learners. Knowles stated that psychotherapy and Freud’s psychological teachings have significantly impacted the study of understanding adult learners (Knowles, 1984). He also theorized that understanding Maslow’s teaching helps in understanding humanistic behaviors and the choices adult students make (Knowles, 1984). This examination of adult learners was an early exploration of how adults differ from child learners, something that was only limitedly understood.

A study by Kapur (2015) indicated that adult learning is intrinsically motivated, unlike children, who need outside rewards to encourage motivation. Knowing these characteristics can help inform practice by organizations and educators when developing curricula and delivery of instruction (Kapur, 2015). This study also showed that adults are individuals, autonomous and self-directed, goal and results-oriented, juggle many responsibilities, have emotional barriers,

and are sometimes resistant to change (Kapur, 2015). Being aware of and identifying these characteristics that make adult learners unique can assist organizations in retaining students to complete programs.

Adult students return to educational settings for many reasons. Many students want to expand their skill set and have opportunities for promotion to make more money (Bellare et al., 2023). They can also want to completely change their career pathway. The reasons for this decision are very individualized to the person impacted, where lifelong learning is now more encouraged (Bellare et al., 2023).

Many times, this type of decision can be life-changing and a great source of stress for an adult student. Generally, when an adult student decides to return to school, it falls under one of four categories: professional, economic, personal, and social, with economic being probably the most recognizable reason (Gardner et al., 2022). Having commitments like jobs, family, and other responsibilities can make returning to school a most challenging undertaking for adult students to attempt.

Aviation Retention

The data on aviation retention across the career technology system is difficult to obtain. There is no specific database accessible to understand the retention rates in other technology centers across the state or country. The data provided for the technology center where this research study was conducted showed that out of the 32 programs on campus where the aviation program is located, the aviation program had the lowest completion rates and a high lack of retention (Hawk, B. Personal Interview, June 16, 2025). The career technology system operates on data from CTIMS (*CareerTech Information Management System, n.d.*). Positive placement is the percentage of students being positively placed into a career pathway related to the career

technology program the student is enrolled in (*CareerTech Information Management System, n.d.*).

The Oklahoma Career Technology System's positive placement rate in 2023 was 94% (Oklahoma Department of Career and Technology Education, 2025). Although this number is relatively high, there are not enough skilled workers to fill the aviation maintenance technician openings, and the program for this case study had the lowest retention rate requiring investigation into why the retention rates are the lowest in the technology center.

Although there is limited literature specifically related to aviation retention, there is research surrounding barriers that prohibit student persistence that have been examined in research studies that are relevant to understanding the framework for this research study. Though much of the literature is related to higher education retention, it is pertinent to understand retention holistically in relation to adult learners.

Barriers to Retention

Students want to be able to provide for themselves and their families, and a factor that can affect a student's income potential is their career type. In 2025, there were 74 million adults whose highest level of education was a high school diploma (Hanson, 2025). Sometimes, in order to increase earning potential, a student must reskill or upskill and return to an educational institution to obtain that training. In many instances, jobs requiring higher education or skill training pay more than jobs with lower education or fewer skill requirements (Education Pays, 2021; Career Outlook: US Bureau of Labor Statistics, 2022).

Adult students often have different roles and responsibilities than traditional students. There is the potential for more roadblocks and barriers that can prohibit them from completing a program or even being able to return to school at all. Research suggests three primary sources of barriers that can negatively impact adult student retention and completion of educational

opportunities are: personal, institutional, and systemic barriers (Osam et al., 2017). Also, students can experience multiple interconnected barriers (Thiem & Dasgupta, 2022). While many of these studies look explicitly at higher educational barriers, understanding these types of barriers is critical to implementing and changing policy and institutional procedures that educational institutions practice when offering educational services to students.

Personal Barriers

Family and finances are significant contributors to difficulties for adult learners. More females are enrolling in traditionally male-dominated programs than ever before (Osam et al., 2017). With this increase in non-traditional student enrollment, more students need support like child care, flexible scheduling, and increased scholarship opportunities in order to complete programs. A student's gender role within their family can impact the student's success when returning to school (Osam et al., 2017). Over the years, the student population seeking higher education or returning to any educational training has become significantly more diverse regarding gender, ethnicity, and the median age of adult learners (Carney-Crompton & Tan, 2002).

Research from the Osam et al. (2017) study also suggests that gender plays a role in the success of an adult student’s educational journey. Numerous female respondents from the study cited children and familial obligations as factors that impacted their ability to attend an educational program (Osam et al., 2017). These responsibilities can put a disproportionate amount of stress on female adult students who are enrolled in an educational program. While male students have challenges returning to school, especially in balancing work commitments, in families with children, women seem to bear more responsibilities, which can increase stress and anxiety and make less time available to dedicate to their studies (Lin, 2016). These family

responsibilities significantly contribute to a lack of completion in the female adult student population returning to school (Lin, 2016).

Prior learning experiences and internal thoughts and beliefs about personal abilities and intelligence can also hinder adult student completion or retention in career technology programs. According to a study by Illeris (2006), many instances of low-skilled workers were caused by those people struggling in school at a younger age and having negative experiences, contributing to negative self-talk and poor attitudes toward educational institutions. Past interactions with teachers, administrators, or the curriculum can impact an adult learner seeking to return to the learning environment (Illeris, 2006).

Boerens also conducted a study that reinforces the work in the Illeris study, suggesting that students with positive educational experiences have higher levels of self-efficacy and are more likely to return to school or stay in an educational program (Boerens, 2011). Most adult students who return to school have a specific reason for choosing the program they are enrolled in.

However, due to the personal challenges adult students face, one study found that 85% of the participants in a perception survey felt stress due to demands on their time and their perceived ability to keep up academically with their peers (Lin, 2016). Mental health and social factors can be significant contributors to an adult student's experience when attending a technology or higher education program.

An additional study by Knowles on adult learning found that a person's ability to learn decreased slightly after the age of twenty-five (Lin, 2016). This decrease was not related to intelligence levels but more affected the students' internal perception of their abilities concerning learning (Knowles, 1980). Adult students who wait to return to school at an older age could face

additional barriers that students right out of high school may not encounter. This can make their learning challenges unique from traditional students.

Institutional Barriers

Institutional barriers can also negatively affect adult learners. These barriers can include non-flexible scheduling options, inadequate support services, and school culture (Beckwith, 2023). Career technology programs are traditionally hands-on programs, so doing online instruction or virtual options has not always been practical or even an option. Also, only recently have some technology centers had evening classes as an option for students to be able to work during the day and attend class at night. Institutional factors and decisions made by organizations can shape individuals' lives and can perpetuate deficit framing in adult learners (Pickard, 2021). Other institutional barriers, such as relationships with instructors and organizational support, also contribute to a lack of completion and affect student motivation (Pierszalowski et al., 2021).

Historically, many institutions, whether higher education or career technology education, have focused on traditional learners with many processes and policies that do not consider adult students' needs, that do not fit into a traditional learning pathway. Many students who return to school feel guilt and stress because of the time they have to spend away from their families (Beckwith, 2023). Institutions may have limited resources to support the mental health needs of students attending programs, which can directly impact the students' ability to persist.

An additional challenge adult students face is the limitation in the delivery of instruction with the career technology system. Because many technology center programs are heavily hands-on learning, the ability to offer alternative vehicles for the delivery of instruction is minimal. Limiting alternate instructional methods can affect adult learners who require flexibility due to family and employment commitments (Renner & Shurska, 2023).

A study by Renner and Shurska explored how institutions of learning can provide support services to address the needs of the learners they serve (Renner & Shurska, 2023). Support resources and modifications within the institution were implemented to address students' areas of need. With the implementation of increased support services and time spent building and fostering relationships between instructors and students, positive improvement in retention rates for adult students was shown (Renner & Shurska, 2023).

Instructor relationships with adult learners are critically important to student outcomes. The study "Student Persistence in Career and Technical Education: A Multi-Sample, Mixed-Method Evaluation of Student Services" explored the link between student persistence and support services implementation, which identified instructors as an integral support system for adult students (Daulton, 2015). The results from the study showed that students indicated their ability to persist in their educational pathway was increased by a sense of belonging, institutional commitment, and career integration provided by the support service and staff mentorship implemented by the organization (Daulton, 2015). Also, the study found that instructors in the career and technology education system spend more time with their students than in a traditional education setting, so their impact on student success was significant, with many of the students indicating that the instructors were their most extensive support system at the technology center (Daulton, 2015). Studies such as this reinforce the integral connectedness that instructors' relationships have on adult students in career technology programs.

Systemic Barriers

Systemic barriers can profoundly impact an adult student's ability to persist and can affect their retention rates in career technology programs. These barriers can exist within the organization and outside of it in the form of transportation issues, economic hardships, and racial or cultural marginalization (Banks & Dohy, 2019). Schools are now looking at opportunity gaps

that the organization lacks in supporting students returning to an educational setting, instead of just focusing on academic outcomes.

A study done by Banks and Dohy (2019) gives some sobering statistics regarding the disparities in groups of enrolled students by race in a higher education setting. There is a substantial gap between six-year completion rates at the higher education level for African American students compared to their Caucasian and Asian counterparts (Banks & Dohy, 2019). African American students' completion rates were about 46% compared to 67% for Caucasian students and 72% for Asian students (Banks & Dohy, 2019). While this study does not give statistical data on career technology program students, this data is imperative for awareness when looking at systemic barriers in career technology programs.

When the culture of a school is not inclusive, students can experience feelings of hopelessness and discouragement (Banks & Dohy, 2019). Research shows that even with factors like GPA and test scores controlled for, students of color often are disproportionately affected by systemic barriers and drop out at higher rates than their peers (Banks & Dohy, 2019). Gender or racial inequities can also significantly affect an adult student's motivation and persistence to stay enrolled in a career technology program (Carrasco, 2019). These barriers can affect students' mental and physical health, which can lead to adverse outcomes and a lack of ability to focus on educational studies.

Many times, organizations' processes and procedures can be a barrier for marginalized students who may be the first generation in their family to attend any type of educational institution. A study by Dulabaum found that students of color had difficulties with financial equity and a lack of education in navigating the financial aid process, which led to higher amounts of student debt and lower completion rates (Dulabaum, 2016). This study's findings give weight to the importance of mentorship and systemic support for underserved students.

A lack of understanding of barriers that affect adult students makes it difficult for an educational institution or the career technology educational system to implement effective support services that will address student needs. An adult student can experience one or multiple system barriers when attending a career technology program. The depth and intensity of the challenges put in front of the adult student, in addition to personal and organizational support services, can be the difference in whether or not the student is successful in their academic endeavor. When a student chooses to leave a program, it is usually not an isolated event but a culmination of several factors (Wood et al., 2017)

Further, it is vital to understand the different types of barriers in the recruitment and advisement process for potential students so that appropriate guidance on career pathways can be given and any needed wrap-around support services can be activated to assist in supporting adult learner success. When assumptions are unmet or out of alignment, adult students can lose motivation or dissatisfaction with their program of study, leading to a lack of retention and completion (Merriam, 2017). It is imperative that organizations periodically examine student experiences and strategic planning goals to ensure alignment of policies, processes, and procedures that nurture and support positive student outcomes.

Summary and Gaps in the Literature

Through a review of the existing research on adult student retention, common themes of personal, institutional, and systemic barriers are everyday experiences for adult students seeking an opportunity at educational training. However, much of the research on retention regarding educational pathways is limited to higher education. There is little research on retention and completion rates in the career technology system, and even less data on student perspectives in career technology education programs, specifically related to aviation experiences. Adult

students attending career technology center programs generally differ from traditional college students and often do not attend school right after high school (Follow-Up, 2023).

The research studies available on retention in higher education use a variety of theoretical frameworks to examine this phenomenon, such as Self-Determination Theory, Bandura's Social Cognitive Theory, and Bean's Student Attrition Model. There is limited research on career technology education retention and even less using Tinto' model of student retention specifically on non-traditional adult students as a lens to view adult student retention within a career technology center program along with focusing on the relationship between persistence and barriers.

The lack of qualitative studies available that showcase the experiences of adult students in career technology programs demonstrates the need for additional research focusing on the identification and understanding of personal, systemic, and institutional barriers that may impact adult students' ability to complete a technology program. Understanding why adult students are not completing programs and identifying and addressing barriers affecting retention rates is vital to increasing the number of skilled workers available for workforce development. This study aimed to understand and address these gaps by conducting a qualitative case study approach that examined challenges related to adult retention and potentially changing organizational practices and policies for supporting adult student retention and completion rates.

The review of literature for this chapter looked at the theoretical framework being used for this case study, Tinto's model of student retention, and how this model was used as a lens to collect, analyze, and interpret the data. A historical overview of the career technology system was also explained to give foundational knowledge for understanding how the career technology system functions and why it was developed. An exploration of the aviation maintenance program

was also reviewed to provide a better understanding of FAA regulations and the curriculum and framework of the training program for aviation maintenance technicians.

This review also examined literature pertaining to the characteristics of adult learners and the motivations as to why adult learners return to school and what unique needs those learners have in an educational setting. A thorough exploration of the barriers faced by adult students such as personal, institutional and systemic barriers was also done to identify the challenges adult students have faced when returning to a school environment. In reviewing the literature, a significant gap was evident in that most of the existing research has been done at the higher education level, with limited data from the career technology system, and specifically looking at challenges in an aviation program within a career technology organization.

By conducting a bounded, qualitative case study with feedback from adult students enrolled in an aviation program, the goal of this study was to address this gap in the literature while also providing important institutional data for school leaders to utilize when making decisions to enhance student experiences in their organization and encourage retention. The following research questions directed the course of this study:

RQ1: What are the perspectives of adult students enrolled in an aviation career and technology education on the institutional and personal challenges they face in completion of the program?

Some other secondary questions that were explored during the data collection process:

RQ1a: What academic, institutional, or personal challenges do adult students experience?

RQ1b: How do external factors (transportation, family, finances) influence decisions to stay in the program or not?

RQ1c: What strategies do adult students use or feel are helpful? Support structures/systems, etc.?

In the following chapter the methodology and qualitative protocols that were used are discussed along with the research design, participant recruitment, data collection and thematic analysis.

Chapter 3: Methodology

Research suggests student completion rates for career technology programs are not high enough to sustain and maintain workforce needs in critical occupation areas, specifically aviation programs. The purpose of this study was to understand the personal, institutional, and socio-economic lived experiences that affect an adult student's ability to persist in an aviation career training program. This study aimed to identify thematic challenges identified by adult students enrolled in an aviation career technology program so that system-wide support services and organizational changes can be made. The more integrated the student becomes within their academic environment, the more likely the student will persist (Tinto, 1998). Tinto's model of student retention, which focuses on students' experiences with academic integration and informal social aspects of the educational organization, aligned with the goals of this study.

Tinto's model of student retention guided the development of the research questions for this study by focusing the content of the questions to explore the students' academic, social, and institutional experiences that impact retention in the program (Tinto, 2012). Also, this framework assisted in guiding the choice of the data collection method and semi-structured interviews to obtain the most comprehensive, rich data set for this case study. When developing the interview protocol (Appendix A), Tinto's theory, which focused on academic, social, and institutional integration, and the research studies associated with the examination of these areas, helped to shape the type of questions that were asked in the interviews.

As this study sought to understand challenges adult students experience when completing an aviation program at a career technology center, identifying these challenges through one-on-one interviews and thematic analysis were utilized. Thematic analysis and pattern matching was used in the analysis of the data collected for this study, and Tinto's model for understanding and organizing the responses was also used as the lens for this study (Tinto, 1998).

The overall goal of this research study was to provide data to local leadership to examine what challenges or barriers are affecting adult students in the completion of the aviation program so that specific interventions can be implemented and that the data from this research could be potentially used career technology system wide to see if these same barriers or challenges translate to other programs of study for potential future research studies.

Research Questions

As previously stated, the following research question and secondary questions were investigated:

RQ1: What are the perspectives of adult students enrolled in an aviation career and technology education on the institutional and personal challenges they face in completion of the program?

Some other secondary questions that were explored during the data collection process:

RQ1a: What academic, institutional, or personal challenges do adult students experience?

RQ1b: How do external factors (transportation, family, finances) influence decisions to stay in the program or not?

RQ1c: What strategies do adult students use or feel are helpful? Support structures/systems, etc.?

This study analyzed interview feedback from adult career technology center students enrolled in an aviation program on challenges adult students feel have affected their ability to complete their career technology center program. The local career technology center at the focus of this case study, along with other aviation programs in the career technology center system, needs to ensure adult students are completing their program of study in order to meet workforce demands for this critical occupation area.

Qualitative Case Study Research Design

The design for this study was a qualitative, single, bounded, instrumental case study to better understand the challenges that affect an adult student enrolled in a single aviation program at a career technology center and the student's ability to complete their program. A case study can be the examination of a single unit, person, group, or program (Ary et al., 2002; Kekeya, 2021). Case studies are often used in research when a multi-faceted problem needs to be studied in a specific setting (Almutairi et al., 2014). When using a case study approach, the researcher chooses the case to investigate because there is an interest in what the case represents (Ridder, 2017). For this specific study, the data showing this program has a lower completion rate assisted in the program being chosen for this study, in addition to the importance of the aviation industry in the state of Oklahoma and beyond.

This type of approach is especially appropriate for this study as the researcher sought to understand the specific experiences of adult students in one specific aviation program. The type of case study design chosen for this study pulls from the research of Yin on case study design and examined gaps and holes in the research, used existing theory or proposed framework, in this case Tinto's model of student retention, and used purposeful sampling and pattern matching in data analysis to provide a holistic perspective of the case (Yin, 2014).

The study was single in nature because the focus is on one aviation program at one technology center. Doing a single case study has the advantage of giving the researcher a deeper understanding of how and why a specific phenomenon happens (Ridder, 2017). The case was bounded because the research was focused only on current adult students in the aviation program. "Bounded means the identification of a part or an element of that organization and its boundaries to study" (Kekeya, 2021, p. 28; Bryman, 2008; Creswell, 2007; Johnson & Christensen, 2008, 2012; Merriam, 1998; Punch, 2009; Yin, 1994, 2003). The study was

instrumental in that the researcher was not looking for data related explicitly to all aviation programs, but rather the challenges adult students face in the completion of this specific aviation program. Instrumental case studies use a specific focus to understand a broader area rather than focusing on the case itself (Kekeya, 2021).

Using a case study approach gave richer, more detailed data from the perspectives of adult students enrolled in the aviation program. Using a case study design allowed for triangulation and the utilization of multiple data sources to give a more holistic lens in which to view the research that was conducted (Ridder, 2017). When examining phenomena that center around human behavior and persistence, many different outcomes and perspectives emerge. Inductive data uses key themes that are observed from data collection and understanding the meaning of the data (Braun & Clarke, 2006). This design was appropriate for this study to better understand students' experiences, perceived barriers, and what institutional policies and practices affect their ability to complete.

Setting and Participants

This study drew upon the interview responses of nine adult aviation students from one career technology center program in the Oklahoma City metropolitan area and recruitment concluded when no other participants volunteered to be interviewed. This was approximately 22% of the enrollment for the program. The students are enrolled in the aviation program for approximately 18 months, and a combination of year one and year two students were interviewed. The participants' ages ranged from 18 to 35. An adult student for this study was a student 18 years of age or older who has a high school diploma or GED. As there were a limited number of female students enrolled in this program, the researcher made every effort possible to get as many diverse responses, both by gender and ethnicity, so that a wide range of responses

were available during the thematic analysis. This study used purposeful sampling by specifically obtaining participants from the aviation program at one career technology center.

> The logic and power of purposeful sampling lie in selecting information-rich cases for study in depth. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the inquiry, thus the term purposeful sampling. Studying information-rich cases yields insights and in-depth understanding rather than empirical generalizations (Suri, 2011, p.65, Patton, 2002, p. 230).

The inclusion criteria for participants were adult students enrolled in the aviation program who were willing to participate in the study. The students, while attending the program, are enrolled in three sections: General, Airframe, and Powerplant. At any one time, only two of the three sections have students enrolled, as there are first-year and second-year students simultaneously participating in the program. Some questions in the interview were geared specifically toward the curriculum to ascertain whether a specific section has a larger impact than another, so that academic challenges could be assessed. The exclusion criteria for this study were non-adult students (high school students or those under the age of 18), not enrolled in the aviation program were not interviewed, and those who were unwilling to participate.

Participants were recruited for the study by working with the aviation instructors to provide information in the form of an information flyer (Appendix B) to students enrolled in the program. This flyer explained the rationale for the study and provided contact information for the researcher so that any questions the potential participants had could be answered. The flyer described the interview process, and the interview questions were related to their background, challenges they had experienced, support and resources they had utilized, and their personal experiences. The flyer explained that their participation and responses were confidential and had no bearing or impact on their participation in the program. The researcher asked for student

volunteers and then had one-on-one conversations privately with each volunteer who indicated their willingness to participate in the study. All participants were fully informed of the process so that they felt comfortable agreeing to be a part of the study and understood their role in the research process.

The researcher submitted the study to the Institutional Review Board (IRB) and received permission to conduct the interviews with the adult students before any interviews or recruitment were conducted. Students' real names were not used for the study. Anonymity practices were put in place, such as using Student P1, P2, P3, etc., in order to ensure privacy and confidentiality of student responses. Gender neutral pronouns were also used due to the small number of female students enrolled in the program to further ensure confidentiality. Each student signed an informed consent form prior to interviews being conducted (Appendix C).

Data Collection Methods

Once the participants committed to participating in the study, they were given a consent and release form to sign. Semi-structured interviews were conducted with each of the participants using the interview protocol (Appendix A). Semi-structured interviews focus on a framework of themes and are flexible (Naz et al., 2022). The interview protocol and content for the development of the interview questions for this study were influenced by the Ruslin et al study (2022) on semi-structured interviews. The study attempted to understand from the research subjects' perspective, and the interview was treated as a conversation (Ruslin et al., 2022).

The researcher played an integral role in the interview process. Ruslin found that qualitative interviews involve the gathering of information along with prior knowledge of what is being studied, sometimes due to the researcher's epistemological role, not just obtaining data (Ruslin et al., 2022). The themes/categories for this interview instrument came from literature explored in the previous chapter on barriers, supports, resources, and student experiences. The

purpose of using the existing literature to inform the development of the interview questions was to use the information on the topic of barriers to adult student completion, so that the researcher could more holistically understand and help to create a pre-determined framework for what the interview questions would include (Naz et al., 2022).

These interviews were conducted in person, however an online interview platform such as Zoom or Microsoft Teams was offered to conduct the interview for anyone not able to participate in person. This option was not needed. The researcher used an audio recording of the interview and took observational notes throughout the interview process. The interviews took approximately 45 minutes each, based on the number of questions being asked. After the interviews, an online transcription service called REV was used to transcribe the audio recordings to assist in data collection. The data from the transcripts was secured and stored on an encrypted, password-protected platform, to maintain security and confidentiality. Also, participant identification information was removed to de-identify the individuals from the identification information. Reflexive journaling throughout the research process was used as a way to minimize bias.

Document analysis was also used as a secondary data source to review retention and completion rates, along with an examination of the program curriculum for instructional content for the course. These documents were used to compare feedback and potential themes that emerged from the adult interviews. Using these additional documents was a way to triangulate the data to better understand the organization's practices, which directly affects the adult students' perception of their experience in the program. It also allowed for the examination of any gaps between policy and what the organization was actually doing.

Data Analysis Procedures

For this qualitative, bounded case study, the data analysis was done through thematic analysis supported by a coding process. Thematic analysis is a method used in research to identify and analyze themes that emerge during the data collection process (Braun & Clarke, 2006). The data analysis by the researcher was guided by the theoretical framework, Tinto's model of student retention, and the experiences and responses from the adult aviation student interviews. Thematic analysis is used to understand themes across an entire data set, not just from a specific item, such as an individual response during interviews (Braun & Clarke, 2006).

That is what made using this data analysis method appropriate for this study: to understand the common challenges with the aviation program, not just the unique challenges experienced by some individuals. As this research study used Tinto's theory of student retention as a framework to understand organizational and systemic barriers, thematic analysis was used to interpret the data gathered cohesively to align with the theoretical framework chosen for this study.

The first step in this process was that all audio recordings were listened to and transcribed exactly as they were stated. Listening to the recordings while reviewing transcripts from REV, a text-to-speech platform the researcher used, helped to ensure the accuracy of the program used to transcribe the audio files. Listening and re-listening to the transcripts multiple times led to a better understanding of the responses provided and assisted in making the data more familiar (Naz et al., 2022). Also, any field notes were re-examined along with documents that were analyzed in the study. Observations of any patterns or recurring themes from notes from the interviews, along with the documents viewed for the study, were noted.

The next step in the analysis process was to use initial open coding. Coding is assigning meaning to data gathered and categorizing the data by labeling it (Riazi et al., 2023). This

process was inductive, and themes and patterns began to take shape from the research data. The initial coding that was examined was more deductive in nature and followed along with the theoretical framework of Tinto's model of student retention, related to academic integration, social integration, external factors, institutional supports, and resources that affected student persistence. Inductive data that emerged from student responses related to challenges was also analyzed for thematic patterns. It is important for this study, based on the review of existing literature on challenges to student persistence and what is already known in research on personal, institutional, and systemic barriers, that a hybrid approach was utilized using both inductive and deductive data produced from the study. This type of approach allowed for flexibility in using both inductive and deductive data, which can strengthen reliability (Naeem et al., 2023).

The researcher's interest in the area being examined played a role in the identification of themes and patterns. This made this type of research more analyst-driven (Braun & Clarke, 2006). As the researcher found when utilizing thematic analysis to analyze data, just because a response is elicited fifty percent of the time and another response is found somewhat less, does not discount the lesser number response as the theme is not always represented by a quantifiable measure and can still be highly relevant to the research questions the study seeks to answer (Braun & Clarke, 2006). Thematic analysis allowed for flexibility for the researcher in identifying themes; however, consistency is the key across the data set being analyzed (Almutairi et al., 2014).

> Therefore, the thematic analysis conducted within a constructionist framework cannot and does not seek to focus on motivation or individual psychologies, but instead seeks to theorize the socio-cultural contexts, and structural conditions, that enable the individual accounts that are provided (Braun & Clarke, 2006, p.14).

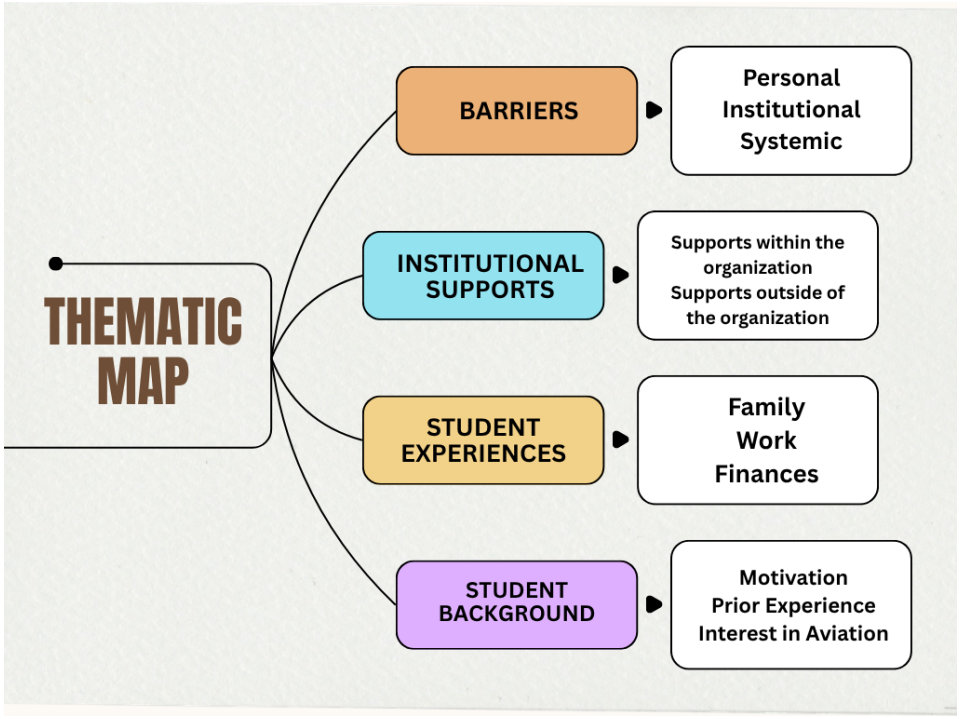
This process of data analysis was tied directly to the theoretical framework for this study, Tinto's model of student retention, by keeping the data analysis focused on the academic and social integration constructs this study sought to understand.

NVivo was going to be used to analyze all coding data gathered; however, there were technical difficulties that prohibited the researcher from utilizing this resource. Instead, the researcher employed manual coding. Manual coding allowed the researcher an opportunity to get more familiar with the participant responses to keep them grounded in the authenticity of the adult aviation students lived experiences. The researcher used an electronic codebook to manually document the analysis process.

Codes, categories and emerging themes began to take shape through the coding process, with final themes developed from a comprehensive understanding of all the data as a whole. Yin's framework for pattern matching involves using theory in conjunction with data patterns that emerged during the data collection phase, along with the relationships between the similarities and differences in the pattern outcomes (Vargas-Bianchi, 2025; Yin, 1994). Flexible pattern matching was used where constructs emerged during the data collection and analysis phase compared to the existing literature. The synthesis of existing literature on student persistence, pattern matching and the differences and similarities to prior research was used to shape the research questions and was also used to corroborate internal validity (Sinkovics, 2018). After the initial data from the interview transcripts was coded, data began to be grouped by overarching themes, and a thematic map was used (Braun & Clarke, 2006).

Figure 2

Thematic map used during data analysis



Note. Thematic hierarchy drawn from Yin's Coding. *Own work.*

An example of a thematic map (*Figure* 2) illustrates how the data was organized and examined during the data analysis phase of research. Using a thematic map and pattern matching required re-examination of the data multiple times to ensure that the themes accurately represent that data set, and also to make sure no pertinent themes were missed when coding the initial data (Braun & Clarke, 2006). Each line of transcription data was analyzed until patterns began repeating and no new codes emerged. Coding then ceased as no new information was added and new information was exhausted, which would be considered saturation (Braun & Clarke, 2006). A final thematic map including final themes and categories is included in Appendix D.

In addition to looking at themes, the integration of data from documents for the study were also considered to compare with the findings from the interview data results. Triangulation

of this data, along with the results from the data analysis, were compared and interpreted through the lens of Tinto's model of student retention, focusing on academic integration, social integration, and institutional commitment. Comparing data that strengthens what is already known about student persistence in the existing literature and data that conflicts with those assumptions is where the gaps needed to be addressed by this study come into focus.

Role of the Researcher

For the methodology of this qualitative, bounded case study, the researcher used a constructivist epistemology stance that views knowledge as data gathered from students' experiences. Constructivism is based on understanding how experiences build meaning and knowledge, which is seen as socially constructed (Mogashoa, 2014). The researcher is a critical, active participant in the collection of data in addition to the analysis and interpretation of the information obtained during the research process. As an insider, observing the problem of practice regarding retention and completion of adult students in the aviation program at the site for this study, along with the importance of producing skilled workers for this critical occupation area, the need for this study became extremely relevant and was of profound importance to the researcher to investigate. The positionality of the researcher, being a career counselor, and the awareness of the lack of completion of adult students in the program assisted in shaping the selection of a qualitative case study. As the aim of this study was to identify challenges adult students encountered while enrolled in the aviation program so that strategic planning and organizational resources could be addressed, using thematic analysis and Tinto's model of student retention as the guiding theoretical framework was the most relevant to this study's goals.

The researcher's role for this study was to recruit and interview the participants from the aviation program. The researcher used thematic analysis to look for patterns that emerged from the collection of responses from the adult students enrolled in the aviation program who

participated in the study. Tinto's model of student retention was the theoretical lens that guided the researcher in analyzing and interpreting thematic analysis. The constructivist approach informed how the researcher identified patterns and understood the data through Tinto's model as the guiding lens.

The researcher's role was unique as a counselor and not an evaluator or administrator over the program. However, the researcher did have a professional relationship with the students, as academic, career, and social/emotional support services are provided as needed. Due to the researcher's role as an insider, the potential for bias must be acknowledged, and because the students know the researcher, the responses in the interviews could have been influenced to a degree. Qualitative researchers also must be aware that their background and experiences can shape their interpretation of the data (Crestwell & Crestwell, 2018).

Although the connection to the students and program plays a role in the research, this was mitigated by reflexive journaling and member checking. The researcher ensured the participants were fully informed about the research process, that their participation had no bearing on their aviation coursework, assured them that confidentiality was maintained, and was transparent in the findings obtained from the study. Member checking emails were sent to participants to give them an opportunity to submit feedback.

Trustworthiness and Rigor

Qualitative research and the methods used to conduct studies can vary greatly because the researcher is human and individual perceptions can differ greatly from one person to the next. Because of the wide differentiation between methodologies to conduct and interpret research studies, the validity and trustworthiness of the study's process and results is paramount. Researchers have their own positionality, background, and experiences that shape the lens through which they conduct research. With that in mind, it is important to have a framework to

ensure that trustworthiness in the study is maintained. Lincoln and Guba (1985) came up with four criteria to help guide trustworthiness in qualitative research: credibility, transferability, dependability, and confirmability (Stahl & King, 2020; Lincoln & Guba, 1985).

Credibility relies on the judgment of the researcher to determine the accuracy of the results of the study (Stahl & King, 2020). For this study, triangulation was used to assist in strengthening the credibility of the study's results. This was done by using several data sources such as interviews, retention and completion data, and observational notes. By using several different sources, when analyzing the thematic patterns produced, the researcher was able to feel more confident in the correlations that emerge.

To increase the transferability of this study, clear descriptions of patterns were included and could be applicable to other research studies (Stahl & King, 2020; Lincoln & Guba, 1985). In order for this to be possible, thick, rich descriptions were used of the participants and their background information, aviation program parameters, and the structure of the program, as well as institutional factors such as the climate and culture of the technology center program and support services. However, due to the sample size and this being a case study, some descriptors had to be left out to maintain anonymity and confidentiality. By giving the complete description of the study, readers can determine whether the findings can be applied to other settings or research studies similar to it (Stahl & King, 2020).

Dependability is measured by the degree to which a study using the same methods in a similar setting with related contexts would garner the same results (Haq et al., 2023). This is why describing in detail the research process for this study through documentation was so important and outlining each step in the process so that future researchers can use the data to better understand how the data was analyzed and interpreted by the researcher.

Confirmability in the trustworthiness process is critically important to ensure researcher bias is limited and that the data analysis comes from the true and accurate feedback from the participants in the study. Accuracy and the involvement of other researchers are key components of confirmability (Stahl & King, 2020). For this study, reflexive journaling was used to maintain objectivity and validity of the research process. Also, an example of the final thematic development of the codebook used during the data analysis phase is included in Appendix E.

Using the strategies from the Lincoln and Guba framework, along with triangulation of data, helped the researcher keep the focus on the participant interview results, field observations, and the use of important documents related to the aviation program that strengthened the themes identified through the research study process and kept the influence or perspective of the researcher to a minimum.

Ethical Consideration

As the career counselor for the program, there must be an awareness of how important it was to maintain the confidentiality and anonymity of the responses the participants provided for this study. The researcher was also cognizant of the awareness needed to make sure the students felt safe and secure in providing their interview responses, since the researcher had previously been known in a role outside of being a researcher. Signed informed consent forms from each participant were obtained, and each participant was assigned a number or designation that obscured their identity. Gender neutral pronouns were also used to further protect anonymity. All of the required paperwork was submitted to the Institutional Review Board (IRB) at the University of Oklahoma for approval to start the process of interviews and collection of data.

Limitations

This research aimed to understand and identify challenges experienced by adult students in an aviation program so that the barriers being experienced can be addressed by the

organization. This specific study examined one group of adult students from one technology center in one geographical region, which limited the transferability of the results and potentially minimized the perspective of adult students due to the sample size being studied. Also, because this study focused on an aviation program at one career technology center, it would be hard to generalize the results from the study to other programs or to high school students, since adult students are the population that were studied and program structure and resources vary between career technology centers.

Finally, because the researcher was interviewing students at the technology center where employed, there was a need to work to limit researcher bias, as the position of an insider, where the case study is being conducted, could have affected the interpretation of the results. It was important to use reflexive journaling to ensure validity and reliability are maintained.

Chapter Summary

For this qualitative bounded, instrumental case study, the researcher interviewed adult students enrolled in an aviation program at a technology center in the Oklahoma City Metropolitan area. Conducting a case study approach provided data on adult students' perspectives on the challenges they face when completing the aviation program. The goal of this study was for the data gathered to be provided to organizational leadership so that institutional and systemic changes can be implemented as needed to support strengthening the retention and completion rates of adult students. By increasing adult completion rates, more airframe and powerplant certified students will be available to support workforce demands. The following chapter will be a presentation of the data gathered.

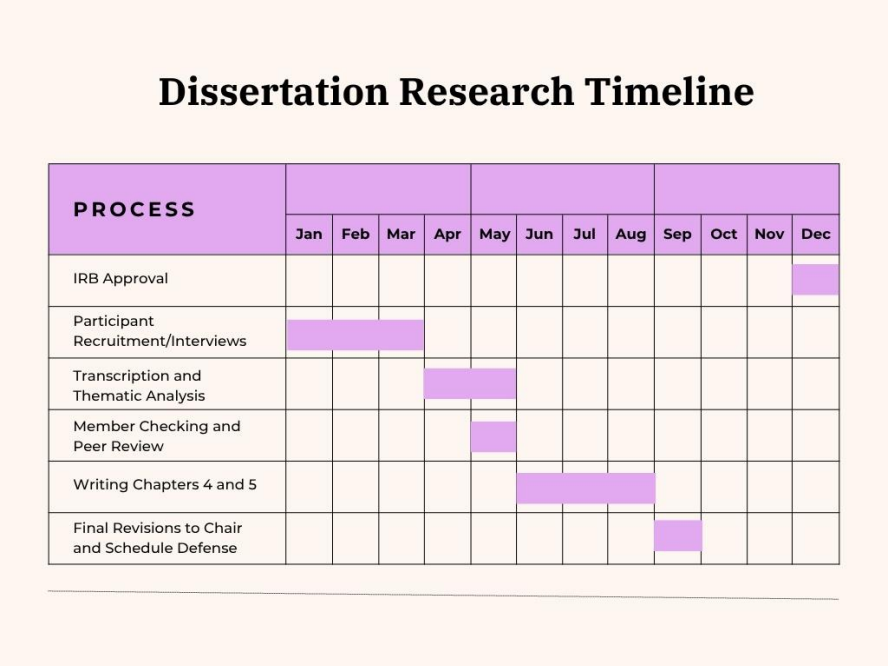
Timeline of the Study

In December 2025, following approval of the proposal for this study, IRB approval was obtained so that recruitment and data collection began. Site permission had already been given

from the Superintendent of the career technology center at the focus of this study. During January through March of 2026, recruitment of participants and interviews were conducted with adult aviation students at the technology center site. Once interviews were completed, April and May of 2026 was used for transcription work and thematic analysis. After the transcription and thematic analysis phase, member checking and peer review was conducted to maintain reliability and to minimize inaccuracies.

Figure 3

Timeline for research process



Note. Timeline for dissertation research. *Own work.*

Chapter 4: Findings

The purpose of this study is to understand adult student perspectives regarding factors that impact persistence in completing an aviation technology center program. With aviation being the second largest industry in the state of Oklahoma, there are significant economic implications for addressing the lack of completion for this career pathway. The study was a qualitative case study that consisted of semi-structured, recorded interviews that explored discussion around topics related to barriers, support and resources, and student experiences. Doing one-on-one, in-person interviews allowed for direct feedback from students currently enrolled in the aviation program and their perspectives on challenges they themselves had experienced.

Data Collection Methods

This study consisted of nine student participants enrolled in a specific aviation career technology education program at an Oklahoma City metropolitan area career technology center. The students who participated in this study did so voluntarily. The opportunity to participate was offered to all students enrolled in the career technology program. One-on-one, audio-recorded interviews were conducted after obtaining informed consent. The development of the interview protocol was guided by the research questions and is broken down into sections on student background, barriers, support and resources, and student experiences to encapsulate the overarching goals related to the aims of the study.

Participants were interviewed on-site, and all interviews were audio recorded. The year two cohort group was completing the program in approximately one month when the interviews were being conducted, so recruiting voluntary participants from that cohort group was

challenging because they were working on completing their final projects and exams before their graduation date.

Once the nine participant interviews were completed, all interviews were transcribed using REV audio transcription software. Transcripts were also verified by the researcher through listening to the audio recordings and manually checking them for accuracy. Once the accuracy of the transcription data was verified, the initial coding process was initiated.

Data Analysis Process

To complete the data analysis process using initial open coding, a codebook was created to document each stage of coding. Every line of the interview transcripts was manually coded by the researcher. The researcher had considered using NVIVO as an additional resource for coding the interview data; however, there were technical issues that prohibited the software from being used in this study. Consequently, the researcher manually analyzed and coded the data using an electronic spreadsheet to organize the coding data from the transcription analysis. Given the size of the participant sample, manual coding allowed the researcher a deeper, richer understanding of the themes that emerged during this process.

The coding process began with a transcription coding table, where participant responses were identified, and direct quotes and codes were assigned. As the coding process commenced, codes, categories, and emerging themes began to develop. Categories were assigned a color related to the area of the study they were most closely associated with. Green was used for supports and resources, yellow was used for barriers or challenges and pink was used for student experiences. This assisted the researcher in giving a visual connection within the codes.

The next stage of the coding process was stage one; coding and identifying categories the coding information was related to. Color assignments to identify patterns were also assigned to categories at this stage of coding. Green was again assigned to support and resources, red for challenges and barriers, purple for categories associated with motivation and blue for any prior experiences the students mentioned. The tracking of the frequency of the use of the codes was also identified at this stage. Although frequency was not used as a sole identifier for this study, understanding holistically how many participants shared commonalities was a critical component to the overall analysis process. Using the color coding of the categories to organize the data assisted the researcher in being able to identify similarities and dissimilarities more efficiently and consistently.

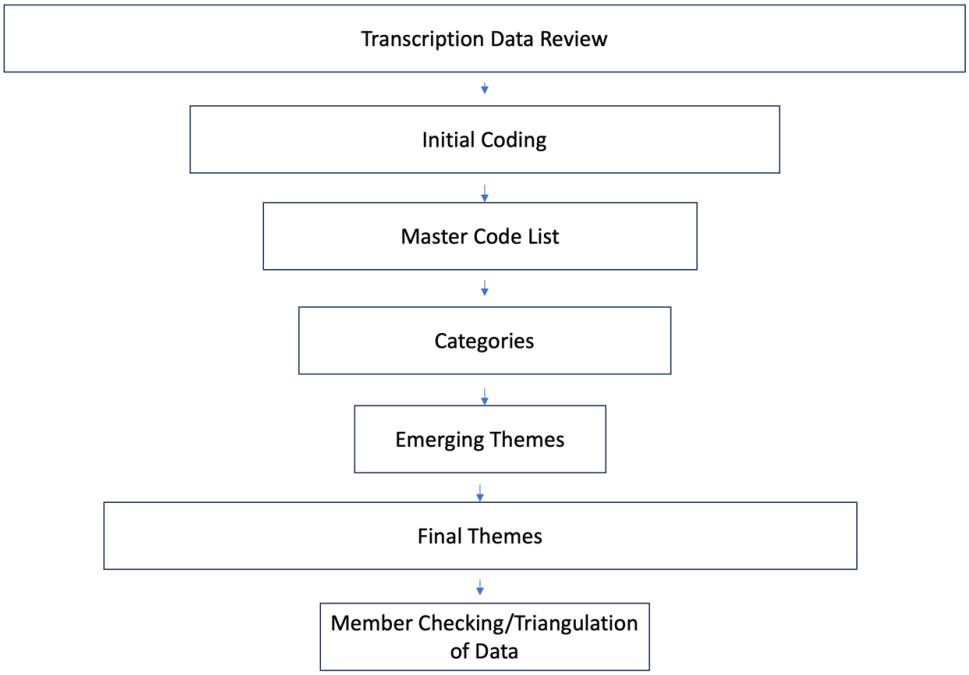
Stage two of the coding process used the information obtained from the stage one categories process and analyzed emerging themes from the data responses of the participants as patterns in the data developed. The emerging themes data led to the identification and emergence of the final overarching themes presented from the complete participant transcription dataset. As the analysis progressed, final themes relevant to the research questions being asked by this study emerged. The data was reviewed multiple times during this process to ensure accuracy. As the process continued to be both deductive and inductive as the analysis of the emerging codes and categories began to take shape, the researcher was able to holistically understand the interconnectedness of the responses the participants gave.

Once the completion of the data analysis process was conducted four main themes came to the forefront from the data. These themes relate to perspectives adult students enrolled in the aviation program have regarding challenges they have experienced while attending the aviation program at the center of this qualitative case study. Other sources of data used for triangulation

were program completion rates, an evaluation of the program curriculum and student enrollment data. Figure 4 is a visual representation of the qualitative thematic analysis process.

Figure 4

Qualitative Thematic Data Analysis Process



The findings of this study are informed by the theoretical framework, Tinto's Model of Student Retention, which, as previously stated, is focused on how the learning environment and student experiences impact completion rates in the program. By exploring the results obtained from this study, educational organizations may be able to enact institutional and systemic policy changes to increase student retention and completion rates. The research questions for this study were:

RQ1:What are the perspectives of adult students enrolled in an aviation career and technology education on the institutional and personal challenges they face in completion of the program?

Some other secondary questions that will be explored during the data collection process will be:

RQ1a:What academic, institutional, or personal challenges do adult students experience?

RQ1b:How do external factors (transportation, family, finances) influence decisions to stay in the program or not?

RQ1c:What strategies do adult students use or feel are helpful? Support structures/systems, etc.?

The findings chapter will be divided into three sections. The first section will be a description of the case study being examined along with a description of the participants for the study. The second section will be a discussion of the data and themes from the participant interviews from the aviation program. The third section will be a summary of the findings and analysis of the four themes that emerged from the data obtained by this study.

Description of the Case

The case examined for this study was an aviation maintenance program at a career technology education center in the Oklahoma City metropolitan area with approximately 39 students enrolled in the program. The current structure of the program is an 18-month airframe and powerplant Federal Aviation Administration-regulated program that trains students to be airplane mechanics. The program at this specific technology center consists of a program with approximately 39 adult students enrolled and that has two courses going on at all times. The program has one start date in August every year and enrolls approximately 24 students each year. The students are referred to as either first-year students who have just started in August of the current school year or second-year students who started in August of the previous school year. Students who enroll in the program receive a combination of classroom instruction and hands-on

learning in order to meet the certification requirements put forth by the Federal Aviation Administration in order to be a certified Airframe and Powerplant mechanic.

The program is structured into three learning sections that each student must complete in a specific order to complete the program. The first section is the General section, which is heavily book and curriculum-focused and lasts from August through December of the first year. There is a General written exam the students must pass at the end of the section in order to move to the next section. The second section is the Airframe section, which is also the longest section in hours required and lasts from January through July. This section enables the students to have more hands-on learning and has testing requirements of written, oral, and practical. The final section, Powerplant, spans from August through February and is the section where students learn most of the requirements for working on the engines of aircraft. There is also testing that is required at the end of this section as well.

The students are required to attend six hours a day, five days a week, during the time they are enrolled in the program. With the unique learning environment of a rigorous academic curriculum, attending all day, every day, and technical hands-on skills that students must be able to master, the aviation maintenance program is a demanding and challenging commitment for the students who enroll in the program.

Understanding the structure and requirements of the aviation program is vital to this case study because the perspectives of the participants from this study experience while attending the program were influenced by the rigor of the curriculum, relationships with the instructors within the program, family support, along with the institutional processes and policies that either supported or created a challenge for the students. The themes that will be presented from the data

gathered reflect the participants' perspectives on challenges and supports that impacted their experiences while attending the aviation maintenance program.

Description of Participants

This study consists of one-on-one semi-structured interviews of nine students enrolled in the aviation program at one specific Oklahoma City metropolitan technology center. The focus of this qualitative case study is to understand the perspectives of the students enrolled in this particular aviation program so that institutional and systemic changes can be implemented to increase retention and completion rates of students enrolled in the program. The students each volunteered to participate in the interview process, and the opportunity to participate was offered to all students equally. To protect participant confidentiality, pseudonyms and number designations (Participant 1 or P1) were given to each participant. Gender neutral language will also be used throughout the study to further ensure participant anonymity.

Table 1

Participants De-Identified Information

Participant-De-identified Designation	**Age Range**	**Enrollment Status**	**Cohort**
Participant 1 (P1)	18-24	Full-Time	Year 2
Participant 2 (P2)	18-24	Full-Time	Year 1.5
Participant 3 (P3)	18-24	Full-Time	Year 2
Participant 4 (P4)	18-24	Full-Time	Year 1.5
Participant 5 (P5)	18-24	Full-Time	Year 1
Participant 6 (P6)	18-24	Full-Time	Year 1
Participant 7 (P7)	18-24	Full-Time	Year 1
Participant 8 (P8)	25-34	Full-Time	Year 1

Participant 9 (P9)	18-24	Full-Time	Year 1

Note. Cohort is the year the student is in the program.

Participant 1:

Participant 1 is a student in year two of the aviation program who had been interested in the aviation field since they were a young child. P1 had participated in prior technical training before attending the aviation program and was working full-time while attending the program. P1 mentioned a combination of work, schedule constraints, and finances as challenges while attending the program.

Participant 2:

As a current student in the adult aviation program, Participant 2 previously attended the high school aviation program and is in year 1.5 of the program. P2's parents had previously attended career technology education, so the participant was familiar with the career technology education system prior to enrolling. P2 worked full-time while also attending college during their time in the aviation program. Some challenges this participant mentioned were the demands of work and school, along with transportation issues, as barriers they experienced. They credited support from their classmates and instructors as vital support systems that helped enable them to be successful in the program.

Participant 3:

At the time of the interviews, Participant 3 was a student who also came into the adult program from the high school program and is in year 2 of the program. Prior to attending the program, P3 had very limited experience doing hands- on work and credits the program for helping gain confidence in their ability to succeed. They mentioned the difficulty of the exams

within the program and collaboration with others as potential obstacles to overcome. P3 credits the support of their family and instructors in helping them reach their goal of completing the program.

Participant 4:

With prior experience in technical education coming from the high school program, Participant 4 mentioned the curriculum and transition from the high school to the adult program as challenging aspects of the aviation program. P4, in year 2 of the program, also spoke about the benefits of being able to start their career debt-free by attending this specific career technology center program and that their family and instructors gave immense motivation and support during their educational experience in the program.

Participant 5:

Before entering the aviation program, Participant 5 was working in a different field full-time but had a parent who had worked in the aviation industry, and that is where the initial interest in the program derived from. P5, who is currently in their first year of the adult aviation program, discussed the difficulties in working full-time while trying to balance work, school, and personal obligations. Participant 5 stated their extreme passion for the aviation field and the support of their parents as motivation to complete the aviation maintenance program.

Participant 6:

As a first-year student, Participant 6 joined the program with limited prior knowledge about the aviation field. Participant 6 spoke about support from family and the institutional tuition waiver, which makes attending the program extremely affordable, as benefits to enrollment in the program. P6 also spoke about the responsibility of the career field they have

chosen and how good a job the instructor they have had in the first portion of the program has done in helping them to understand the academic and safety aspects of the program. Participant 6 also mentioned the meaningful peer support they have experienced during their time in the program.

Participant 7:

Participant 7, in their first year of the program, had previously been enrolled in college before deciding to join the aviation program. One of P7's parents had previously worked in the aviation field, and they felt this was very helpful as a resource in understanding the program's academic content. They also credited their instructor for help understanding the FAA exam and learning how to study correctly for them. P7 did mention the difficulty in catching up on the curriculum after absences and spoke about the support and relationships with the peers in the program as an immense source of support.

Participant 8:

Having family who work in the aviation field was an integral part of the decision-making process for Participant 8 to decide to enroll in the aviation program. In their first year in the program, P8 described their overall experience as positive; however, they mentioned the challenge of the classroom exam formats being limited and not conducive to all learning styles. They also mentioned the hardship that the attendance policy has on students related to testing requirements. P8 observed that their instructor overall did an excellent job in the delivery of instruction, which made the course experience more enjoyable.

Participant 9:

Participant 9 described having a passion for aviation and working with their hands as the main motivating factor for enrolling in the aviation program. P9 also previously took courses in aviation prior to enrolling in the adult program and is currently in their first year in the program. P9 cited that the location of the technology center program and the low cost of the program have added benefits to attending this specific program. Participant 9 discussed working full-time and the adversity it creates by limiting adequate study time to master the curriculum of the program. They stated the support they receive from their parents, both financially and emotionally, helps to keep them on the pathway to successful completion of the program requirements.

Presentation of Findings

A comprehensive analysis of the data from the interview transcriptions from the adult aviation students resulted in the identification of four final themes. Thematic analysis using open coding, categories, and emerging themes informed the development of the final themes from the study. As the final themes emerged from analysis of the coding data, the research questions informing this study, along with the theoretical framework, Tinto's model of student retention, guided the identification of the final themes. Table 2 provides a summarization of the connection between the final themes and the research questions guiding this study.

Table 2:

Final Themes Summary

Final Theme	**Description**	**Research Question**
1. Long term career goals and an interest in the aviation field are motivating factors in student persistence in the program.	Multiple participants stated that their career goals and seeing what their future could be like by finishing the program	RQ1, RQ1b

	motivated them to continue their enrollment	
2. Curriculum rigor and program structure influenced student experiences.	Several students stated the rigor of the curriculum and exam content were barriers that had to be overcome in order to stay in the program.	RQ1, RQ1a
3. Positive instructor interactions and hands-on learning opportunities contributed to student program retention.	Participants described the relationships built with the instructors that gave the students motivation and encouragement to persist.	RQ1, RQ1c
4. Family influence and support had a positive impact on student success.	Many students stated encouragement and support both emotional and financial were factors in their success in the program.	RQ1, RQ1b, RQ1c

Note. RQ1: What are the perspectives of adult students enrolled in an aviation career and technology education on the institutional and personal challenges they face in completion of the program? RQ1a: What academic, institutional, or personal challenges do adult students experience? RQ1b: How do external factors (transportation, family, finances) influence decisions to stay in the program or not? RQ1c: What strategies do adult students use or feel are helpful? Support structures/systems, etc.

The themes each connected directly to the overarching research question related to student perspectives, with each also interconnecting and correlating to the secondary questions the study sought to answer. Themes related to strategies and support structures and systems show how the adult students use their resources to assist them in overcoming obstacles related to their enrollment and persistence in the aviation program. Themes highlighting barriers and challenges experienced in the program focused on the program curriculum and institutional structure of the way the program is delivered. The following section will give a thorough explanation of each of the final themes with evidence and alignment to Tinto's model of student retention.

Themes

Long-Term Career Goals and Interest in Aviation

The thematic data finding that had the most evidentiary support repeated by many of the participants was long-term career goals and an interest in the aviation field are motivating factors in student persistence in the program. In the interview protocol background section, there were questions that specifically addressed students' reasons for enrolling in the program and what the participant did prior to attending the program (Appendix A). This section of the protocol was developed with guidance from the theoretical framework and the concept in Tinto's model of student retention regarding pre-attributes students come into a program having (Tinto, 1975). This theme also relates to research question RQ1b, understanding how external factors influence students' decisions to stay in the program.

The adult aviation students stated the reason for being interested in the technology center program was a previous interest in the aviation field. This data point was repeated nineteen times across seven different participants. Many of the students stated they had prior experiences with aviation, either with someone in their family working in the field or they had a lifelong passion for the aviation industry. P5 stated, "I'm gonna be, you know, doing something that I actually love and something that, you know, I actually see myself making a career out of long-term career. So that was, that was my reason for not dropping the program". The interest in the aviation field for many stemmed from not just recent interest in the program, but for some participants, many years of wanting to explore this pathway. Participant 1 also stated, "Aviation as a whole has interested me ever since I was a kid." For many, this lifelong love for the aviation field helped in guiding them toward becoming an aviation mechanic.

Another aspect of this theme was the students' understanding of what finishing the program will do for their future. This was a common response repeated multiple times across four different participants. Many of the participants had worked in other fields prior to deciding to enroll in the aviation program, and these experiences helped them decide the aviation program and the benefits and future opportunities they could experience were the right choice for them.

Five different participants spoke in approximately fourteen different instances during the interview process that prior work experiences contributed to them wanting to join the program. There were participants who had previously attended college and determined it was not for them. Participant 9 stated, “I went and tried college, did a semester there, and it wasn't really for me”. The experience of attending college in conjunction with knowing someone who worked in the aviation field or had previously attended a technology center program influenced participant decisions to enroll in this aviation program.

Also, some students had no prior mechanical experience and had worked outside the aviation field in an office environment that was negative. Participant 1 mentioned, "Sitting and working on computers all day got monotonous and really boring." This was motivation for choosing a more hands-on learning environment. Although the field is varied in the experiences the participants had prior to enrolling in the aviation program, even some who had experience in the mechanical field, working on aircraft specifically, was the draw to enroll. Participant 9 said, “I really enjoy mechanical work, but working on cars for the rest of my life didn't sound super optimal, but working on planes, that's really fun”.

When looking at the interview data of the participants, many of the participants implied a shared perspective regarding the effect of prior interest in the aviation field and the correlation the choice to enroll in the aviation program had regarding their long-term career goals. While the

interest in the aviation field seemed to stand out regarding the number of participants who cited that as a factor for enrolling in the program, that does not diminish the overall impact the student's long-term goals also had in them staying in the program to finish. The subsequent theme will analyze the data on challenges and barriers experienced by participants related to the program curriculum and structure.

Curriculum Rigor and Program Structure

Several participants discussed the rigor of the curriculum and exam content as barriers that had to be overcome in order to stay in the program. The interview protocol, (Appendix A) also has a section of question directly linked to barriers and challenges. Three participants interviewed spoke directly about how tough the curriculum was for them. Participant 4 described their experience with the curriculum by saying, "There is a lot, a lot of information that you have to know and absorb for Power Plant, and it was pretty new to me because for high school it's, you just learn the exact same thing over and over again". A common response from participants was that there was a lot of information that had to be absorbed in a very short period of time. Several described the pace of the program as moving very quickly. Participant 7 specifically mentioned "how fast-paced it is" when describing how the instruction for the course is delivered, and Participant 9 said, "If you can't, if you can't keep up, it's, it's hard".

It was also mentioned by several participants about the difficulty in the program structure when moving from the high school aviation program to the adult program. Participant 2 spoke about "Transitioning from the high school program to the adult program, it went from high school levels of work to a lot of more complicated work." Participants mentioned the difficulty of moving into the adult program that was already going from the high school program and feeling unprepared. Participant 4 stated, "Switching from the high school program to the adult

program was a really rough, rocky patch for me," and Participant 7 stated, "It's definitely a transition from high school to this". Interview feedback indicated that the participants who had attended the high school program and moved into the adult program did not always feel the transition was positive and created a barrier to completing their final portion of the program toward getting their certification.

A large discussion point that came up during the interviews was the exam content and the way the exams are structured in the aviation program. Multiple participants described the challenge the exams presented for them in staying in the program. The program requires students to pass the exams in order to stay in good standing in the program and progress. Participant 3 spoke about the exams, saying, "biggest academic uh, challenge so far has been the actual like exams". Participants also mentioned a lack of options in making up courses at the technology center and having to go somewhere else to make up any failed classes.

The way the exams are presented along with the content students are required to learn came up as barriers to student success. The Federal Aviation Administration has written, oral, and practical tests the students must pass in order to be certified. Participant 9 spoke about this requirement and how challenging it is, with the program requiring you to pass by stating, "The way that it's set up is you've gotta pass those FAA tests". Also, participants mentioned the way the exams are structured within the program as very limited for different learning styles. Participant 8 said, " They're almost all just fill in the blank, so almost no options for multiple choice". The participant feedback was a desire for more differentiated options for exam content to better serve students who may not do as well with that type of exam.

Moreover, participants spoke about the influence the rigor of the aviation program curriculum, along with the actual program structure, had on their experience and the challenges

and barriers these factors created during their enrollment in the program. Participants routinely mentioned the rigor of the curriculum, exam content format, and the transition from the high school to adult program contributing to the student's decision-making on staying enrolled in the program or dropping out.

Based on the findings from the data, multiple participants spoke about these challenges, indicating that the curriculum and program structure do play a significant role in a student's program experience. The findings surrounding this theme display elements of the guiding lens of this study, Tinto's model of student retention, related to academic and social integration and also to the research question RQ1 and RQ1a surrounding institutional and personal challenges participants experienced while enrolled in the aviation program. Related to program structure, the next theme will explore the effect that instructor and student interactions and hands-on learning have on student persistence.

Positive Instructor Interactions and Hands-On Learning

Another strong theme that emerged from the analysis of data was that positive instructor interactions and hands-on learning opportunities contributed to student program retention. The interview protocol (Appendix A) was developed to address areas within the program related to student experiences. Participants reported multiple instances of positive reinforcement, motivation, and guidance the program instructors provided that were influential in the perception and experience the students had in the program. Additionally, the recurrent topic of students utilizing hands-on experiences to learn the curriculum made the content easier to understand and the program much more enjoyable.

Regarding instructor and student interactions, instructor support was reported nineteen times across six different participants as a contributing factor to their staying in the program.

Participant 9 spoke about one of the instructors saying, "The instructor specifically does a great job at just knowing what to go over and how to teach you." Participants frequently mentioned the way the instructors delivered the information they were learning impacted their ability to succeed. “I think my instructor is very good at what he does. He explains things well”. (P6)

Communication from the instructors was an important factor in persistence in the program. Participant 2 talked about communication directly, saying, "Being able to communicate with my professors and just talk to them and them help me and meet me where I'm at and kind of get me to where I need to be. So, I've really had a great experience.” Participants also felt it was very important to be spoken to and treated like adults. “The instructor is willing to talk to you like you're an adult”. (P3)

Participants also felt as though their instructors wanted them to be successful, with three separate participants mentioning how important it was to them for their instructors to be encouraging. Participant 3 spoke about one of the instructors checking in on students that seem to be struggling. “The instructor wants to give them the steps and motivate them”. Another participant mentioned that their instructor “was very supportive”. (P4) Additionally, participants felt their instructors were patient and wanted to support their learning processes. “The instructor is always answering the questions and, like him always, you know, being there and being supportive of, uh, curiosity I think is like really, really cool”. (P5)

Eight of the nine participants specifically mentioned their experience in the program was positive, with the program giving them a sense of belonging. With one participant saying, “this is probably the best I've done in school, so I've been loving it.” (P8) Frequently, the participants talked about the reason they were staying in the program was that the overall experience was positive and it made them want to actually come to school.

During the interview process, multiple participants stated a desire to be involved in a learning pathway that allowed them to use their hands. Many felt being able to utilize hands-on learning opportunities was a strength in the way they were able to master the content and curriculum within the aviation program. Participant 1 spoke about this saying, "I prefer doing things more with my hands, like taking things apart and fixing them." Having these opportunities helped to interconnect the bookwork the students were required for the certification process and assist in making the connections between curriculum requirements and putting the learning process into actual practice. Participant 3 also felt the same, saying, “I actually like to work with my hands and work on these things, and I like to do things right and almost perfect when I go through it”.

Other participants described the more enjoyable aspect of the program as getting to go into the hangar and work with their hands and the program giving them experience before they accept their first position after completion of the program. “When we get into industry, it's not like that's gonna be our first, uh, experience being in a hangar and having to keep track of our own safety. (P5) It was discussed during the interviews that not all technology centers offer as much of an opportunity for working directly with the aircraft, and because this technology center does allow for such opportunities, it made this program more appealing for the students.

This theme connects with the theoretical framework by connecting academic integration, which is making the coursework relevant to the student learning experience, and also social integration, in the building of relationships with the students' peers and instructors. By the students being able to access a mentorship relationship with their instructors, this strengthens their sense of belonging and commitment to completing the program.

The academic integration concept through a safe learning environment where they are encouraged and can make mistakes leads to opportunities for the building of technical skills and inner self-confidence, which can bolster persistence. Also, because the students are using their skills on the aircraft and being able to see their learning process in action, it fortifies the real-world relevance the aviation program is providing for their future career endeavors.

Generally, the participants interviewed for the study described the positive relationships with their instructors and the hands-on learning opportunities are what contributed to their retention in the program. The participants repeatedly mentioned positive classroom experiences, instructor support, and hands-on learning that impacted their perception of and commitment to the aviation program. These were not isolated responses and were reflected in the data from multiple participant responses during the interview process. It also directly correlates to research question RQ1c, which focuses on support structures and systems that adult students use or feel are helpful in persisting in the program. As this theme focused on instructor support and hands-on learning, the next theme will examine the impact family influence and support has on student retention in the program.

Family Influence and Support

Aviation program students consistently mentioned family influence and support had a positive impact on their success. The interview protocol, (Appendix A) has a section devoted to the exploration of support and resources, which intersect with this theme. All nine participants stated that encouragement and support, both emotionally and/or financially, were factors in their excelling and staying in the program. Additionally, many of the students interviewed mentioned that either a family member or close friend had spoken to them about working in the aviation field or worked in the aviation sector themselves.

Regarding family support, many students mentioned that their family members provided both encouragement and the motivation to complete the program. Participant 7 said, “My parents are like, just, just huge motivators in my life”. Participant 4 also added, “My mom has always raised me that if you're gonna start something, you're gonna finish it. So, she made me finish it, and she talked me through it, being like, if you quit at this, you are gonna quit at every single hard thing that comes near your life”. There were several other participants who mentioned specifically that their biggest source of support was their parents.

Another area participants mentioned was regarding transportation support in order to get to the program. Several participants mentioned either not having their license or not having reliable transportation to get to the aviation program. There is not easily accessible public transportation near the career technology center, so most adult students drive themselves or have to rely on others to attend the program. Participant 4 mentioned, “My dad drives me here every morning. And then my mom or uncle comes, picks me up.” Participants also mentioned family members giving them rides to work after school as well so that they can attend both school and work. “I had a lot of help with transportation since I was struggling with it, which is super helpful”. (P2)

It was also mentioned in the interview feedback that family members were providing financial support in order for the participants to be able to attend the aviation program. Many of the participants do work full-time while attending the program, but some were able to not have to work because of the support from family. “I don't have to try to work a full-time job”. (P5) “They pay for my food and water and even, uh, for gas for my car”. (P6) Many showed great appreciation for the support they received from their families, stating, “I probably owe my life to my mother”. (P3)

An additional factor the participants spoke about regarding either their reason for enrolling in the program or for staying in the program was the influence and advice given to them by family members regarding aviation career pathways. Participant 8 said, “I joined the aviation program because my brother owns his own aviation shop”. This came up in multiple interviews regarding students having some type of connection to the aviation field. Participant 8 spoke about an opportunity they have once they complete the program as a factor for joining, “I'm here 'cause I wanna work with family”. Participant 9 also spoke about the influence their dad had on their decision to join the program, “My dad has been an aviation mechanic for over 30 years now”.

Some participants had family members who were not mechanics but in a different sector of aviation, which sparked an interest. “My great-grandparents were pilots, so I heard my dad telling stories about them flying”. (P2) Although some of the participants had no mechanical background before entering the program, there were some who had family members that were from a mechanical background, though not specifically aviation mechanics. “My dad was a mechanic, his dad was a mechanic, his dad was a mechanic. Kind of runs in the family”. (P4)

The findings surrounding family influence and support are reinforced by the repeated mentions during the interview process by participants regarding the impact their family members had on their experience in the program. Family influence, financial and transportation support, along with motivation and encouragement, were identified over and over as significant elements of influence on the participants lived experiences during the program. When speaking about challenges and barriers students experienced during the program, many across multiple interview responses credited their family members as a resource and support in overcoming these obstacles.

When considering all of the data obtained from the interviews surrounding this theme, the importance family members play in the aviation students' lives directly affects student outcomes in the aviation program. Overall, this theme reflects the theoretical framework regarding institutional commitment that can assist students in successful persistence in completing the program.

It is important to understand the interconnection between the final themes, the research questions, and the supporting categories and participant responses in this study. Table 3 provides a visual representation of those connections.

Table 3

Research Questions and Theme Alignment

Research Question	**Final Theme**	**Supporting Categories**	**Participant Evidence**
RQ1: What are the perspectives of adult students enrolled in an aviation career and technology education on the institutional and personal challenges they face in completion of the program? RQ1a: What academic, institutional, or personal challenges do adult student's experience?	Curriculum rigor and program structure influenced student experiences.	Curriculum Challenges, Program Structure, Academic Challenges	P2, P3, P4, P7, P8, P9
RQ1b: How do external factors (transportation, family, finances) influence decisions to	Long term career goals and an interest in the aviation field are motivating factors in student persistence	Career Motivation/Persistence, Career Motivation/Enrollment, Career Motivation,	P1, P2, P3, P4, P5, P7, P9

stay in the program or not?	in the program.	Prior Experience	
RQ1b: How do external factors (transportation, family, finances) influence decisions to stay in the program or not? RQ1c: What strategies do adult students use or feel are helpful? Support structures/systems, etc.	Family influence and support had a positive impact on student success.	Family Influence, Family Support, Financial Support, Family Transportation Support	P1, P2, P3, P4, P5, P6, P7, P8, P9
RQ1c: What strategies do adult students use or feel are helpful? Support structures/systems, etc.	Positive instructor interactions and hands-on learning opportunities contributed to student program retention.	Classroom Experience, Instructor Support, Instructor-Student Interactions, Hands-on learning	P1, P2, P3, P4, P5, P6, P8, P9

The research questions and theme alignment table provides a holistic representation of the correlation between the adult aviation students' perspectives during their enrollment in the program and the central focus of the research questions the study aims to address through the interview and data analysis process of the study.

Triangulation of data for this study was done through multiple components. Although participant interviews were the main source of evidence from the study, examination of the program curriculum and evaluation of the completion rates for the program were also considered. All of the information was used to support a comprehensive viewpoint of the data and to help in identifying patterns in the dataset. Also, looking at each of the participant responses and comparing similarities in the responses between participants allowed the researcher to recognize patterns and maintain consistency when manually coding and finalizing themes.

The researcher emailed the final themes and findings of the study to participants for voluntary feedback based on the findings of the study; however, no participants provided responses or feedback. Below is a triangulation data source table to explain the use of each source of data.

Table 4

Triangulation Data Sources

Data Used	**Purpose of Use**
One on one interviews	Provided direct feedback from participants in the program
Program Curriculum Examination	Allowed researcher to understand program structure and requirements for completion
Completion Rates	Contributed to the overall understanding of the central purpose of the study and to examine student persistence and drop-out rates
Participant Response Comparisons	Used to identify patterns and help maintain reliability
Member Checking	Was used for validity purposes for participants to review findings and be able to submit corrections or suggestions. No participant responses were obtained.

Findings Summary

Chapter four is a presentation of the findings related to adult student perspectives on challenges and barriers experienced while completing an aviation career technology program. This study utilized nine, one-on-one semi-structured interviews and employed thematic analysis to understand the data. Four themes emerged from the data analysis of inductive and deductive manual coding using a codebook for examination of the data. The overarching themes were:

- Long-term career goals and an interest in the aviation field are motivating factors in student persistence in the program.
- Curriculum rigor and program structure influenced student experiences.
- Positive instructor interactions and hands-on learning opportunities contributed to student program retention.
- Family influence and support had a positive impact on student success.

While there were other data points that emerged during the analysis of the adult aviation responses, these four overarching themes represented the most influential aspects of the data set related to the central focus and purpose of the study. Findings indicated that an interest in the aviation field prior to attending the program did impact the participants' overall motivation for enrollment in the program. Having an interest in the field shaped many of the participants' long-term goals and led to their decision to enroll in the aviation program and pursue this specific career pathway.

The aviation program curriculum and the specific program structure of the program also presented challenges and barriers the participants had to overcome in order to persist in the program. Many of the participants expressed difficulty with exam content and transitionary processes when moving from the high school to adult program. While these factors were considered challenging by some of the respondents, several mentioned help from peers or instructors in navigating these barriers.

Instructor interactions, along with the ability to utilize hands-on learning opportunities, were considered significant sources of support and contributed to the positive perception many of the participants expressed during the interview process. Overall, most participants had a very

positive impression of the aviation program as a whole, with instructor relationships and building their technical skills by kinesthetic learning on the actual aircraft as focal points mentioned in their ability to be successful.

In the final analysis of the findings, the most meaningful discovery was the impact family influence and support had on the aviation student's perspective and ability to succeed in the program. All nine participants mentioned some connection to family regarding either why they enrolled in the program or as a support system for them to succeed during the program. These findings highlight the importance and significance family and support systems have on a student's ability to be successful in a rigorous course such as an aviation maintenance program.

The findings from this study can provide guidance for institutional policy and decisions career technology organizations make regarding informing decisions related to operational and technical processes. Chapter 5 will provide a discussion of the findings, the correlation to the theoretical framework and current literature, along with recommendations for future research and limitations of this research study.

Chapter 5: Discussion of Findings

The purpose of this study sought to understand the personal, institutional, and socio-economic lived experiences that affect an adult student's ability to persist in an aviation career training program. Specifically, this qualitative case study focused on an Oklahoma City Metropolitan aviation career technology program and the lived experiences the adult students enrolled in the course had regarding their perspectives on challenges and barriers they faced along with support and resources they utilized.

Summary of the Study

One on one semi-structured interviews were used to collect the data for this study, along with examination of and triangulation of data from program completion rates, an evaluation of the program curriculum and student enrollment data. Data analysis was done using a hybrid approach considering inductive and deductive data using manual coding along with pattern matching to quantify the data into codes, categories, emerging themes and final themes. Using this method allowed the researcher to gain a deeper understanding of the data obtained from the feedback of adult aviation students who participated in the study. Since the central focus of this study was to understand adult student perspectives, being immersed in the transcription data from the interviews and reviewing the interview responses repeatedly, along with manually coding the data, allowed the researcher to view and analyze the data through the constructivist epistemological lens.

The theoretical framework, Tinto's model of student retention along with the researcher's positionality helped in guiding the development of the research questions, along with the interview protocol. This case study was designed to understand the academic, social and institutional commitments that affect retention rates in this specific aviation program. With

aviation being the second largest industry in Oklahoma and a critical occupation area for economic growth for the state (Oklahoma Department of Aerospace and Aeronautics, n.d.), identifying barriers and challenges that could prohibit students from completing and going into the workforce needed to be examined.

Review of the Findings

Upon completion of nine one on one, semi-structured, in person interviews with adult aviation students enrolled in the aviation program at the focus of this study and the feedback from those interviews analyzed, four overarching themes emerged that assisted in the better understanding of the viewpoints the adult students had concerning challenges within the program. Chapter four gave a more in-depth overview of each of the themes. The main concepts of the four themes were: long-term goals and interest in the aviation field, curriculum rigor and program structure, positive instructor interactions and hands-on learning and finally, family influence and support. While not an exhaustive list of all factors impacting student participation, these four areas were repeated consistently across participant experiences during the entirety of the research process.

Long-Term Goals and Interest in the Aviation Field

The study's thematic finding that had one of the strongest correlations across participants interviewed for this study were a strong interest in the aviation field and the student having already set long-term goals. These responses were some of the prominent motivating factors for persistence and retention in the aviation program. As the data analysis process commenced, repeated instances of codes and categories related to a passion or prior interest in aviation and aviation career fields led the adult students to seek out enrollment in this specific career technology program. In addition, and many times in cooperation with an interest in aviation,

student long-term planning and career goals were significantly impacted by the desire to work in the aviation industry.

Some of the shared coding that emerged from the data set during the analysis phase were an interest in aviation, career motivation and prior experiences. Seven of the participants stated specifically that the reason for them being interested in the program was interest in working in the aviation field. Multiple participants mentioned that interest being the most significant factor for the choice to enroll in this specific program and also their prior work experiences shaped their decision for wanting to work as an aviation mechanic, both by exposure to the field and also other negative experiences in different fields that made the choice clearer.

During the investigation of the participant responses through examination of the interview transcripts, an obvious pattern became apparent that almost all of the students had some type of connection or exposure to knowledge of careers in aviation prior to making the decision to enroll. With the recurrent input from participants speaking to their motivation to join the program in conjunction with their career pathway goals being influenced by prior experiences, this theme had strong correlated data that reinforces the study's first thematic finding.

Curriculum Rigor and Program Structure

The theoretical framework that was chosen for this study, Tinto's model of student retention, can assist educational organizations with program and systemic changes. The findings from this theme illuminate specific institutional challenges and barriers the participants experienced in the aviation program which are areas that could be adjusted or modified by the organization to increase student retention and completion rates with the identification of specific areas of concern for students.

One area that was repeatedly mentioned by participants was the exam formatting for testing. Many participants mentioned the lack of options in the way the exam content was given, in addition to the way the instructor was presenting the testing preparation materials. Several students mentioned the pacing of instruction as impeding their ability to succeed. These concerns could be an area of curriculum design within the classroom exams that could be modified to be conducive to different learning types. However, due to the requirements of the specific FAA testing for airframe and powerplant certification, the technology center would have to be cautious in maintaining the level of preparedness for the certification exams. Accommodations can be requested for FAA Part 147 testing, but students are required to provide specific documented need for the accommodations (U.S. Department of Transportation & Federal Aviation Administration, 2022).

The additional finding within this theme that were mentioned by multiple participants was the transition from the high school to adult program for students and the difficulties encountered by the students who were affected. Participants mentioned the challenge in joining the adult program that had already been in progress and not feeling there was enough support during the switch between instructors and sections. The program structure regarding the high school to adult program transition is an opportunity for the career technology center to either implement more support or align the curriculum in a more advantageous way for these students to eliminate potential roadblocks in their completion of the adult program.

Positive Instructor Interactions and Hands-On Learning

Student and instructor interactions were discussed extensively across multiple participant interview responses. Many of the adult aviation students mentioned positive comments about how their instructors helped them understand and explained concepts that were difficult.

Students felt the passion their instructor had for teaching them the material, which in turn made them want to come to school. While not every student had positive instructor interactions and some negative experiences were conveyed during interviews, an overwhelming amount of feedback from participants was overall positive regarding their experience in the program.

In addition to relationships with their instructors, adult aviation students repeatedly mentioned getting to work with their hands and learning their technical skills by actually doing the work helped tremendously in understanding the curriculum and made the experience much more enjoyable. Some of the students had some prior mechanical experience either through other technology programs or previous jobs they had done. However, several mentioned having no prior mechanical experience, so getting to take things apart and put them back together assisted in their ability to comprehend and succeed in the program. This impacted student motivation and self-confidence by reinforcing positive learning experiences the students were having getting to work on the aircraft.

This finding can be used by career technology centers to implement professional development support for instructors in nurturing and developing positive interactions with students. Since many of the students based some of their opinion of the program on their relationship with their instructor, building and fostering instructor interpersonal skills could help to increase retention. Also, the findings from this theme can assist the technology center with the development and alignment of the curriculum from the high school to the adult program to encourage more successful outcomes for those students.

Family Influence and Support

The finding that seemed to influence all participants interviewed for this study was the impact family had on their ability to succeed in the program. All nine participants mentioned

their family as either a source of support or the person either directly or indirectly responsible for them enrolling in the program. Participants spoke about family members either working in the aviation field or helping them investigate career pathways that led to enrolling in the program.

Financial and emotional support from family members assisted students in being able to stay enrolled in the program, despite many working full-time. Having the additional assistance, made it possible for many to work less hours, which enabled students to have more study time for the program requirements. Work schedules and financial responsibilities were mentioned repeatedly by participants, and resources and support provided by family members in many cases was a contributing factor to student persistence to complete.

Regarding applicable changes the career technology center can make from this study, this finding would be one of the more difficult to address because it is impacted by outside factors that many times, educational institutions have no control over. Having more counseling and financial resource support could help fill in the gaps for students who do not have familial support, but it cannot replace the encouragement, care and concern most of the participants mentioned their family provides for them.

Alignment of Findings to Research Questions

The relationship the themes from this study have to the research questions is very interconnected with many of the themes answering more than one of the research questions the study aimed to answer. Chapter four explained the final themes and their correlation to the research questions (Table 2). This section will synthesize the relationship of the connections each theme has and where research questions and theme commonality overlap.

RQ1: What are the perspectives of adult students enrolled in an aviation career and technology education on the institutional and personal challenges they face in completion of the program?

Research question one concerning perspectives of adult aviation students was addressed by all four themes in this study. All of the themes provide feedback and responses from adult aviation students regarding difficulties they experienced in the program. Theme one regarding an interest in aviation and long-term goals explained aviation students' persistence in times of struggle and the origin of where their commitment to the program originated from. Theme two related to curriculum rigor and program structure further emphasized participant perspectives and adult students' description of exam content challenges along with scheduling and transitional opportunities within sections of the program. Theme three highlighted positive instructor relationships and hands-on learning in relation to the student's overall opinion of their experience in the program, which impacts student commitment when faced with barriers or challenges in the program. Theme four provides an understanding of the impact family influence and support has on student persistence during the enrollment in the program.

All four themes intersecting in their relationship to the central research question for this study shows that there are many connected factors that impact aviation student experiences. While some of the themes can be addressed through institutional commitment and modifications, academic and social concepts are contributing factors in the aviation student's overall perspective and experience. The findings that support this question strengthen the belief that various elements influence adult aviation students' perspectives both positively and negatively.

RQ1a: What academic, institutional, or personal challenges do adult students experience?

Primary challenges and barriers experienced by adult aviation students include exam content, instructional delivery of program materials, scheduling and lack of transitional support

from the high school to adult program. This research question was addressed by Theme 2 regarding curriculum rigor and program structure. Institutional set up of the pace of the program and the alignment of the timing when high school students enter the adult program were found to be difficulties experienced by multiple students in this study. This finding aligns with the review of the curriculum of the program which requires students to learn intensive amounts of information in accelerated sections over a short period of time. Also, the examination of the program completion data showing a significant concern in retention rates gives weight to participant feedback regarding academic challenges and concerns.

Several participants gave feedback during the interview process that they felt unprepared or somewhat lost when starting the adult program after being in the high school program. Also, participants mentioned there were no options for making up course content that students failed during the course of the program without having to go to a different technology center that offered the course. In addition, the lack of diversity in the instructional practices for exam preparation was a source of frustration for some.

Collectively, these findings cohesively explain some of the academic, institutional and personal challenges adult students face while enrolled in the adult aviation program at this technology center and support that these challenges impact adult student experiences and ability to persist. This finding also highlights that student perspectives related to challenges experienced are not limited to one area of difficulty but across several areas that holistically shape student outcomes.

RQ1b: How do external factors (transportation, family, finances) influence decisions to stay in the program or not?

Research question RQ1b was addressed in this study by two interconnected themes: Theme 1 on long-term career goals and an interest in the aviation field and Theme 4 regarding family influence and support for aviation students attending the program.

Theme 1 focused on the impact of student long-term goals, which in many cases were influenced by their family members guidance and advice. Many participants mentioned knowing what job they were going to be able to obtain once they completed the program kept them motivated to finish. Several mentioned their parents helping them decide what career pathway to take, which ultimately led them in enrolling in the program.

Theme 4 on family influence and support was overwhelmingly the most mentioned factor during the interviews with participants. Each of the participants stated the impact their family members had on the choices they made to enroll in the program and were a crucial source of support for them to stay and complete. With families contributing to both the emotional and financial support of many of the participants, this finding in conjunction with Theme 1 provides a collaborative and comprehensive response to this research question.

RQ1c: What strategies do adult students use or feel are helpful? Support structures/systems, etc.

In answering research question RQ1c which focused on strategies or support systems students used or felt were helpful, a cross connection with Theme 3 and 4 was made. Although both of the findings from these themes helped to answer other research questions in this study and have been previously explained, these two themes also provide context and understanding in the specific relationship family and instructors supplied in the success of adult students in this study.

Participants regularly mentioned their instructors as an influential source of support. Many of the adult students mentioned either the interactions they had with their instructors as

purposeful or that their instructors explained the materials in a way that made them more understandable. While not every student felt their instructors were a source of support, instructor relationships were mentioned so many times in the interview process by multiple students that it was identified as a prominent factor for many of the students interviewed for this study.

Theme 4 provides integral insight into this area of the study by concentrating on the role family provides to assist students. All nine participants responded favorably about the influence their family had in providing the ability for them to work less hours or not work at all. This in turn gave participants more time to study and made them feel better prepared for the classroom and certification testing.

Family also encouraged many of the participants emotionally through difficult experiences they had outside of the program unrelated to program content. Participants stated these personal challenges would have affected their ability to stay enrolled without their family members' support. These findings support a need for more institutional support services for adult students as the assistance each of the students receive from family is not equitable or as easily measurable since it occurs outside of the institutional program day.

When looking at the research questions the study aimed to answer, the themes that emerged from the data from this study consistently addressed the participants lived experiences regarding challenges and barriers experienced while enrolled in the aviation program. Many of these themes correlated to multiple research questions the study sought to answer, which allowed the researcher to identify consistent patterns in the feedback given by the participants. These commonalities in perspectives shared by the adult aviation students show that there are targeted areas the technology center could address in mitigating the adverse effects these challenges are imparting on the student’s ability to persist. Although the degree to which the institution may be

able to implement resources that manage barriers students identified due to outside factors beyond the institution's control, there are areas of concern where adjustments in organizational practices could have a positive impact on student completion rates.

Interpretation of the Findings

Understanding the connections within this study related to the research questions, existing literature surrounding students lived experiences and challenges in persistence along with the correlation to the theoretical framework Tinto's model of student retention, will be presented within this section. The interpretation of the findings from interview feedback from adult students and the themes which emerged from the thematic analysis will be discussed in relation to their significance regarding the context of this case.

Due to the interconnection of themes and research questions, the discussion of findings will overlap in some areas as the analysis of the data showed connected relationships between areas of the study. Since the overarching research question corresponds to all four themes, each sub question will be discussed first and an integration of the comprehensive connection within the main research question will be synthesized to integrate all of the relationships within the study. This section will differ from the previous section on alignment of research questions as that section focused on mapping the connection each theme has to each of the research questions. A comparison to the existing literature surrounding this subject and a connection to the theoretical framework will also be illustrated. This section will focus on the implications and connections of the findings to this specific aviation program case.

Academic, Institutional and Personal Barriers Affecting Student Experiences

The findings of this study show that adult aviation student experiences enrolled in the program at the center of this case study are collectively impacted by challenges from diverse

areas. The findings from this study support the prior research done by Osam et al., (2017) that identified three primary sources of barriers: personal, institutional, and systemic barriers. Each of these areas affects adult aviation students' resolve regarding persistence and determination in completing this program. This study revealed that the difficulties experienced by the aviation students were not isolated, but interrelated challenges that coalesced to transform the perception and commitment students had to complete the program just as the study by Thiem & Dasgupta, (2022) previously found that adult many time experiences multiple, interconnected barriers.

Theme two focuses on how curriculum rigor and program structure influenced student experiences and gives understanding to participant feedback regarding their background with regard to this case. Academic factors such as the pace and rigor of the curriculum, student learning styles, along with the different delivery of instruction from the instructors within the program created institutional inequities felt by some of the participants. Institutional factors such as a lack of options for students who fail a course and financial hardships contributed to student commitment to completing the program. Also, personal challenges such as scheduling constraints due to work schedules and family responsibilities impacted the ability for students to commit their full capabilities to studying and mastering the required course content.

When looking holistically at this study regarding challenges and barriers, the findings indicate that a systemic issue exists within the internal structure of the program and the students' personal obligations brought in from outside of the scheduled program time. Examining the relevant details outlined, gives weight to the multi-layered requirements adult students have to successfully persist in technical skills training opportunities.

The data related to this theme indicates that participants felt the formatting and options of the exam content provided a potential roadblock in their success in the program. The limitations

of learning style options placed an undue amount of stress and unease for participants which led them to question their ability to be successful in the program. A prior study done by Malhotra & Apicerno, (2023) found that a profound barrier to adult student success was self-confidence. Several of the participants mentioned self-doubt or not having full confidence in the ability to succeed in the course. This aspect of the research is important to understand because it creates an opportunity for institutional support systems to be established that address not only student learning style differentiation, but also mental health support services more easily accessible for adult students. This information shows that participants are balancing many different facets of uncertainty during their time in the program and whether they stay enrolled or not is not easily answered by one specific cause.

The findings are supported by previous literature surrounding adult students returning to the learning environment and the impact the curriculum of the program has on their experience (Illeris, 2006). Also, regarding student self-confidence, Boerens (2011) study also showed that students with higher levels of self-efficacy were more likely to persist. Both of those studies reinforce the responses given by the participants and extend the literature surrounding this topic.

Time constraints and the rigidity of the program structure were also significant challenges participants faced during their enrollment. Lack of study time due to work or family responsibilities played an undeniable role in participant experiences. The findings are supported by a study by Beckwith, (2023) which examined the role non-flexible scheduling along with inadequate support services serve in the success or lack of success of adult students. This creates an opportunity for the organization to explore options related to the structure of the aviation program and whether it is conducive to the overall success of adult students with additional responsibilities outside of the program.

When using Tinto's model of student retention as the lens for understanding and framing this research question, participants' experiences were impacted by their classroom interactions within the program along with the other extenuating factors that affected their everyday lives. Just as the study by Davidson & Wilson, (2013) showed that a student's academic integration and sense of belonging within the program made the difference between giving up or staying enrolled. Since the role of the institution from this theoretical lens is to provide appropriate supportive services and encouragement of social and academic development (Tinto, 2012), organizational adjustments to curriculum alignment, scheduling options, remediation and increases in the availability to mental health and intervention services could be implemented to address the concerns related to this research question highlighted by the data from this study.

Impact of External Factors on Student Persistence

The findings from this study show that regarding research question RQ1b, there were several significant factors that directly impacted an adult aviation student's ability to persist in completion of the program that came from outside of the program. An intersection of themes one on long-term goals and an interest in aviation and theme four concerning family influence occurred in informing this research question. This correlation of themes demonstrates that external factors played a crucial role and had considerable influence on adult aviation students within this case. Although some of these factors are outside the scope of the institutional influence, their impact on the student's ability to succeed in the aviation program are of critical concern as they can alter the trajectory of student completion for this program.

Theme one shows long-term career goals and an interest in the aviation field are motivating factors in student persistence in the program. This theme shares insight into the motivation to join the program as well as career pathway objectives that affect students'

decisions regarding staying in or dropping this program. Factors such as career motivation and prior experiences shaped the decision-making process for participants in this study and in many instances was the main reason for enrollment.

Participants who had family members who worked in the industry or had some type of a personal connection to the aviation field indicated this prior knowledge assisted in their deciding to join the program at the focus of this study which aligns with the findings surrounding theme four that family influence and support had a positive impact on student success in this case. This theme also has interconnections with research question RQ1c so this section of the discussion will focus on the influence segment of the findings and the support portion will be discussed in the section related to RQ1c.

The findings within this research question and themes are supported by a study done by Kapur (2015) that found adult students to be intrinsically motivated and results and goal oriented. Many of the adult students in this case study had considered what the career pathway would look like upon completion of this program, which directly impacted their internal motivation upon facing challenges. Although finances were mentioned as a reason for choosing the aviation career field, each student's reasons were very individualized and each participant's answers fit their own personal experiences which supports findings from the Bellare et al. (2023) study.

Although many studies cited family obligations and commitment, the findings from this study support the work by Merriam (2001) which states that adult learning experiences are complex. Each of the participants for this study had varying feedback regarding the depth of influence family members had whether it was an immediate member of the family that had prior

experiences in working in the aviation field or an opportunity to gain employment through an opportunity after completion of the program.

Schedules, personal commitments and time constraints were also factors that affected participants in this study, with many stating a lack of time to study or having to work to financially support themselves. The institutional policy on strict attendance and lack of alternative schedule options were considered barriers. This supports a prior study done by Renner & Shurska, (2023) that found that inflexible scheduling options hindered students with outside commitments.

Support Systems and Resources Utilized by Aviation Students

In addressing RQ1c, what strategies and support systems do adult students use or find helpful, the findings indicate that adult participants in this case are supported by a variety of sources both internally and externally. This research question was informed by two interconnected themes. Theme three focused on positive instructor interactions and hands-on learning opportunities and their contribution to program retention. Theme four in addressing this research question, is concentrated on the effect family support has on student persistence. The two themes demonstrate the cohesion and inter-relatedness of internal, institutional resources of the instructors within the program and the external support systems of family on student retention. Previous research by Fisher (1995) found that organizations should be aware of the unique need for support systems for adult students to be able understand the holistic phenomenon of this case study, it is vital to understand that both of these themes support the unique needs of the participants for this study.

Relationships between instructors and students were cited by many of the participants for this study, indicating the importance of that role in student retention rates. This aligns with the

study done by Fincham et al. (2021) that mentions academic and social integration's impact on persistence. Understanding this aspect of the study is critical because of the significance participants gave to the influence the instructor had regarding their experience. A study done by Pierszalowski et al. (2021) reinforces that relationships with instructors can be an institutional barrier if not supportive and positive. Organizational hiring for this program and the people selected for instructing students is a critical component lending directly to student perspectives on their overall experience in the program. This is a component the organization has some authority on when choosing personnel for this position.

Transportation challenges and financial hardships were cited as factors that impacted participant experiences. These findings are supported by a previous study Banks & Dohy (2019) that found transportation and economic hardships affect student completion. Participants indicated family supportive measures both financially and emotionally had a direct impact on their ability to stay in the aviation program. Help with getting to school and with financial supportive measures was mentioned frequently by participants for this study which displays the difference the assistance provided made in their ability to succeed.

This aspect of the findings within informing RQ1c differs from the prior discussion point in that family support is an external support system students utilized in this study and the amount of assistance varied greatly by participant. However, even though the institution has limited leverage in affecting external support systems, understanding the consequence the absence of or availability of resources has on student success is essential in integrating effective completion processes.

The findings from this study demonstrate the relevance the theoretical framework has in understanding the experiences of the participants. Tinto's model of student retention is focused

on understanding the institution's role in providing support systems to address student needs (Tinto, 2012). Also, the framework states that creating targeted supports for students can encourage persistence (Tinto, 2017). Awareness of the connection between the two themes informing this research question, underscores the theoretical framework's priority on both academic and social integration, relationships with faculty members along with access to external supportive factors and the ability for institutions to understand and facilitate student completion.

Adult Student Perspectives on Challenges in Program Completion

When considering all of the data holistically, the findings on adult student perspectives on challenges and barriers experienced during the aviation program found interconnectedness between academics, institutional and personal and social barriers that impacted student persistence while enrolled in the program. Just addressing one area does not comprehensively support educational success for students in the program, but a variety of resources and support systems are needed to fully encourage student completion.

Many themes emerged during the analysis process, and while each of the overarching themes have significant influence on adult student experiences, there were several examples of overlapping relationships between themes such as academic rigor and student instructor interactions. Also, family influence on students' decisions to enroll in the program along with the support provided to the adult students allowed for many of the participants to stay enrolled in the program. Personal obligations such as work and scheduling constraints created challenges adult students in this case experiences along with institutional practices such as inflexible scheduling and lack of course recovery options. The findings from this case demonstrate that the theoretical framework chosen for this study accurately reflects the complex experiences adult aviation

students experience across academic and social integration along with institutional commitments from the organization at the center of this study.

Although most of the previous literature related to student persistence centers on higher educational institutions, this case study demonstrates that in a career technology center setting, the existing literature surrounding persistence along with the theoretical framework, Tinto's model of student retention chosen are extremely relevant and applicable to this study's findings. This study contributes to the overall body of knowledge surrounding student persistence, by introducing an exploration within a career technology program setting.

Understanding the findings of the lived experiences of adult aviation students interrelates to the significance of the study by providing data that encourages resource implementation and modifications from the institutional level to better support and foster an environment that increases adult aviation student completion rates. In addition, this study not only provides data and feedback for the institution where the case study was conducted, but could also provide a contribution to other studies within the career and technical education system.

Implications for Practice

This qualitative case study provides vital implications that impact practice at the institutional, program and instructor level. As mentioned, many times in previous chapters, the purpose of this study was to provide integral data so that organizations can implement modifications that support student persistence so that there are more skilled workers available to support the aviation industry in Oklahoma. The findings in this study show that adult student experiences in this program are unique and the challenges these students experience are interconnected across academic, social and institutional processes. Since these areas are also in

alignment with the theoretical framework and the thematic analysis results, an explanation of suggested actions that can be taken will be discussed.

Instructional Modifications

Adult participants frequently mentioned the importance of their relationships with the instructor in the program, whether that was in the way curriculum was delivered or in the connection and encouragement the instructor provided. The instructors in this case study play a critical role in the perception adult students had of their overall program experience. As people differ in personality, it is difficult to equitably measure the direct impact of instructor demeanor and ability to connect with students. Providing professional development related to community building within the program and opportunities for collaboration between students and instructors would be an effective benefit to developing positive instructor-student interactions. This implication is supported by the findings of Theme three which found positive instructor interactions contributed to program retention.

Institutional and Structural Modifications

Consideration of the alignment of curriculum related to the transition from the high school program to the adult program needs to be examined to provide a smoother, more supportive adjustment. Many of the participants felt underprepared when moving into the adult program. This is supported by the evidence from Theme two, curriculum rigor and program structure influenced student experiences. With the responses of several participants emphasizing the difficulty of this transition, the organization could implement time built into the end of the high school program to provide time for the students making the transition to meet with the instructor they will have in their first section as adult students, be able to ask any questions and

have time over the summer to remediate and prepare for the new material they will be moving into.

During this time set aside for these students, student support services such as financial aid officers and mental health support services could come in and meet with the students to make them aware of resources available to them and what to do if they need additional assistance. If in person meetings are difficult, a partnership with the Marketing department at the technology center could be utilized to create an orientation video to provide to high school student before the transition. Although access to financial aid and a mental health counselor is currently already available, a more intentional process could be implemented to present this information to them proactively instead of reactively.

Options on-site for course recovery for students who fail a section should be considered to increase retention rates. With students having to go to another technology center to make up failed courses, this creates an unnecessary barrier for students. The program could offer evening makeup courses every quarter for courses with the highest failure rates or extend the program completion date by eighteen days and incorporate makeup time to one Friday a month. While this would not fully eliminate the need for students to go elsewhere to make up courses, it could address the high impact courses that are causing the most difficulty for students. Tutoring services could also be implemented, however with most of the participants working as soon as they get out of class, most would be unable to stay after to get additional help. Also, with the concerns expressed by participants in this study surrounding the challenges experienced with the exam content, program structured exam preparation may assist in bolstering confidence in students in the aviation program as they prepare to take the certification testing.

This study found that all students required some type of support in order to persist, whether that was institutional, family or personal. With this knowledge, formal early intervention practices should be put in place to identify at-risk students and be able to offer resources and support services. A referral template could be developed that centers around attendance thresholds, instructor reporting of changes in behavior or lack of progress and financial difficulties. While this list is not exhaustive of all concerns, these specific areas could be significant indicators and when addressed early, could have the potential to address roadblocks that may derail student enrollment.

Theoretical Implications

The findings of this case study were supported by Tinto's model of student retention, although most prior research informed by the use of this model was conducted in a higher education setting. Generally, the findings support the framework's assertions regarding the influence prior experiences have on adult learners in an educational setting along with the impact of academic and social integration and institutional commitment.

Data analysis from participant feedback showed a correlation to all three areas of the framework and the themes that emerged from the thematic analysis were consistent with the premise of the framework. Themes two and three are informed by the academic integration section of the theoretical framework, considering the importance of instructor relationships and how the students performed related to the curriculum in the course. Multiple themes were informed by the social integration piece of the framework by understanding student motivation for enrolling in the program, prior experiences and relationships built within the program. Regarding institutional commitment, the need for varied and extensive support systems provided by the organization was found to be a critical component toward supporting student success.

The findings from this case can provide a better understanding of the distinctive experiences career technology students have when enrolled in an aviation program. Knowing there are so many connections within this case study provides a more comprehensive awareness of the relevance of the framework related to career technology education programs.

Recommendations for Future Research

The findings of this case study provide important information career technology administration can utilize in the development of the district strategic plan and policy and practice implications. However, there are some areas where the findings from this study can be used as a foundation to expand and extend the research to further investigate challenges and barriers affecting student persistence.

First, since this study was done as a case study, at one specific technology center, future research could expand to other career technology centers that have aviation maintenance programs. Since those programs likely have differing structures and policy considerations, a deeper exploration of student experiences may be better understood with a larger population being sampled. Having a larger sample could also allow for more gender specific questions that may uncover areas of gender specific barriers not found within this study. An increase in the participants to consider feedback from high school students as well to encompass all students who are enrolled in an aviation program may be a pathway future research could explore.

Another avenue for future research could be focusing on the instructor perspective within an aviation program or in career technology programs in general. This would provide a different viewpoint in observational data from instructors regarding challenges and barriers within the program.

An additional sample population to consider for future research opportunities could be students who did not complete the program. Finding out feedback from students who dropped out of the program could shed some insight into challenges or problems that arose that the participants for this study did not experience. The researcher initially considered including this population for this study, however there was extreme difficulty in obtaining contact information and making contact with those students. This potential roadblock should be considered by future researchers if they choose this pathway.

Support and resources were significant sources of feedback in this study so future research opportunities could also shift the focus to what support services career technology centers provide to all adult students and examine the impact of the differences in the support services on student retention and completion rates. Since technology centers vary in size, number of staff and overall enrollment options, studying the differences in the available assistance students receive could be an approach to consider.

Limitations of the Research

In the examination of this case study, several limitations should be considered. This study was conducted at one technology center, with a limited number of participants who self-selected for participation in this study. Semi-structured interviews gave invaluable feedback for analysis in this study, however reliance on the accuracy of the data strictly relied on the accuracy of the participants' responses. Also, the enrollment in the program of the case study had low female enrollment, so deeper investigation into gender specific barriers and challenges may have been more significant if a larger pool of interview responses were able to be obtained.

Second, this study was conducted at one specific career technology center, in one geographical area and may not be able to be transferable to other aviation programs. Also,

because only adult students were interviewed for this study, other groups such as high school student experiences could differ vastly. Other institutions may have different frameworks for program structure and policy and practices that could affect perceptions of other adult students enrolled in other aviation programs.

In spite of the listed limitations, this study does still provide valuable insight and feedback into challenges and barriers student participants in this case study experienced while enrolled in the aviation program. Institutional practices and policies can be shaped by the data provided from this qualitative case study.

Conclusion

This study contributes to the body of literature surrounding adult student persistence by exploring the impact of curriculum rigor, program and institutional structure, family influence and support, interactions with program staff along with prior experience and motivations and how each of these factors affected the overall experience of the students enrolled in this aviation program. Although this study was not able to understand and explain why students who were enrolled in the program dropped out, the findings provide invaluable data on how students are succeeding despite facing challenges and the supports they are utilizing to assist them in staying in the program.

This qualitative case study sought to understand adult student perceptions on challenges in completing an aviation career technology center program. The case focused on an Oklahoma City Metropolitan career technology center aviation program to understand what barriers students were experiencing that were negatively impacting persistence rates. By understanding these challenges and barriers, organizations would be better equipped to assist in addressing the shortage of aviation mechanics which support Oklahoma’s second largest economy, the aviation

sector. The findings from this study show that an interconnection of academic, social and institutional obstacles exist that influence a student's ability to succeed.

Regarding the overarching research question for this study, in addition to the sub-questions the study sought to understand, the analysis uncovered that an interest in the aviation field, student-instructor relationships, curriculum rigor and family influence and support all play a significant role in student retention. This data supports that adult student learners have unique challenges in an educational setting and that institutions must be multi-faceted in their approach to supporting and nurturing adult student learning experiences.

While this study does not explain all existing obstacles encountered by adult aviation students, it does provide meaningful findings that can be utilized for institutional changes and strategic planning objectives. The career technology organization can analyze the findings from this study to use as an avenue that can strengthen support services, inform program structuring decisions, curriculum alignment and relationship building to promote student engagement which could contribute to an increase in retention rates and students reaching the finish line of the program.

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APPENDIX A

Adult Aviation Career Technology Student Protocol

Participant:

Age:

Identified Gender:

Date:

Release Form Signed: _____Yes _____No

Protocol Sections Used:

_____ A. Introductions

_____ B. Background

_____ C. Barriers

_____ D. Support and Resources

_____ E. Student Experiences

_____ F. Conclusion

Other Topics Discussed:_____
_____
_____

Post Interview Comments or
Observations:_____
_____
_____

Interview Protocol

Participants in this research study will be interviewed, and the audio recordings from the interview will be transcribed at a later time using an audio-to-text transcription application, REV. Handwritten note-taking will also be utilized. The interview process should take approximately one hour to complete. Participants will be able to access the transcript of the interview at a later time if requested. There may be a need to follow up with the participants to understand any issues once data analysis occurs.

Participant Protocol

With your permission, I will record our conversation and take written notes. You will need to sign a release form to participate in this research interview. Participation in this interview is entirely voluntary, and if you no longer wish to participate, you can discontinue involvement at any time. The interview process should take approximately one hour to complete. Thank you for your participation in this research study.

A. Introduction

Good morning/afternoon. My name is Kristi Stephens, and I am conducting a research study on understanding and identifying barriers to adult students completing the aviation career and technology program. Your responses will help this organization better support students just like yourself. This interview is being recorded. The purpose of this study is to better understand adult aviation student persistence and to implement resources or support to better assist adult students' ability to succeed. The interview process should take approximately one hour to complete. Do you have any questions before we begin? (Give time for any questions that may be asked).

B. Background Questions

1. Tell me about yourself and why you enrolled in the aviation program.

2. What did you do prior to attending this program, and what contributed to your decision to choose this route?

3. How far into this program are you, and when do you anticipate completing this program?

4. Whom or what was the most influential factor in your decision to attend this technology center program?

C. Barriers

1. What challenges have you faced while attending the aviation program?

2. What academic obstacles made attending school difficult, or what did you find difficult, that could have caused you not to complete your program?

3. Have there been any non-academic challenges, such as work, family, etc., that have made attending difficult?

4. Was there a time in your program you thought about stopping your enrollment, and if so, why, and what caused you to change your mind?

D. Support and Resources

1. What support do you have to help you attend school? (Specify financial, personal, or other factors).

2. How helpful have your instructors or school support systems been in helping you stay in the program?

3. What do you feel this technology center could do to better support adult students' ability to complete their program?

E. Student Experience

1. Can you describe your overall experience in the aviation program?

2. Are there any specific situations or people who positively or negatively impacted your experience?

3. Was there a time you ever thought about leaving the program? What made you stay?

F. Concluding Questions

1. What advice would you give to a prospective student enrolling in this program?

2. Is there anything you would like to share that you were not able to, or do you have any additional questions?

3. If further clarification is needed, would you be available for any follow-up?

Thank you for agreeing to speak with me today and participating in this study. If you wish to share any additional information at any time, please feel free to contact me. If there are no other questions or information you would like to add, then this concludes today's interview.

Stop recording.

APPENDIX B
Recruitment Flyer



Appendix C
Consent to Participate in Research
University of Oklahoma

You are invited to participate in research about adult student perceptions to challenges in completing an aviation program at a career technology center.

If you agree to participate, you will participate in a one-on-one interview that will take approximately 30-60 minutes. This interview will be audio recorded and may be used in University research with your permission.

There are no risks or benefits to participating in this research.

Data collected online or by a device and transmitted electronically: You will be asked to participate in an online interview on Microsoft teams if an in-person interview is not possible as part of this research. The organization hosting the data collection platform has its own privacy and security policies for keeping your information confidential. There is a risk that the external organization, which is not part of the research team, may gain access to or retain your data or your IP address which could be used to re-identify you. No assurance can be made about their use of the data you provide for purposes other than this research.

Audio or video recorded data collection: There is a risk of accidental data release if we collect your data using audio and video recordings. If this occurred, your identity and the statements you made could become known to people who are not on the research team. To minimize this risk, the researchers will transfer data to, and store your data on, a secure platform approved by the University's Information Technology Office.

Collection of demographic or geographic location data that could lead to deductive re-identification: You will be asked to provide demographic information that describes you. We may also gather information about your geographic location in this research. Different combinations of personal and geographic information may make it possible for your identity to be guessed by someone who was given or gained access to our research records. To minimize the risk of deductive re-identification, we will not combine identifying variables nor analyze and report results for small groups of people with specific demographic characteristics.

There are no benefits for participating in this research.

Your participation is voluntary, and your responses will be: confidential.

We will not share your data or use it in future research.

I will be asking some questions to find out how you want me to report your ideas. You can refuse any that you do not like without any penalty.

Do you agree to be quoted directly, without the use of your name? ___ Yes ___ No

Do you agree for your data to be archived for scholarly and public access? ___Yes ___ No

Do you consent to audio recording? ___ Yes___ No

Do you consent to video recording? ___ Yes___ No

Even if you choose to participate now, you may stop participating at any time and for any reason.

If you have questions about this research, please contact: Kristi Stephens, Researcher information and Dr. Ed Frick, Faculty Advisor.

You can also contact the University of Oklahoma – Norman Campus Institutional Review Board at 405-325-8110 or irb@ou.edu with questions, concerns, or complaints about your rights as a research participant or if you don't want to talk to the researcher.

You will be given a copy of this document for your records.

I agree to participate in this research.

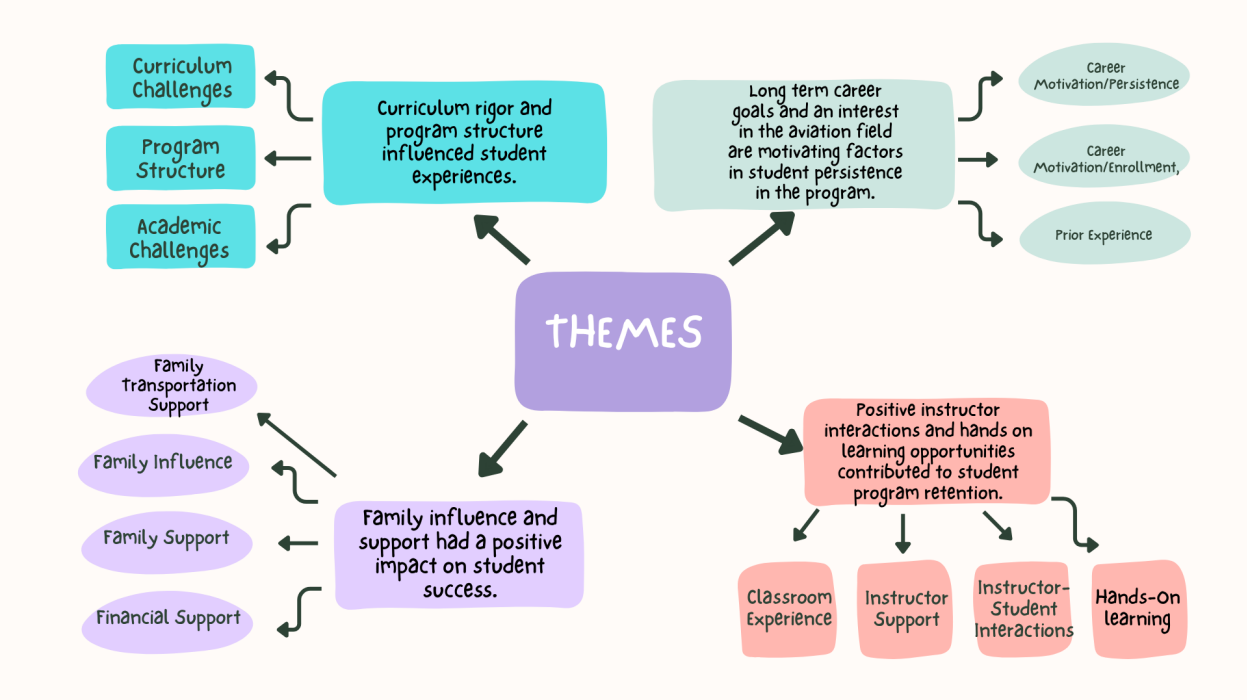
_____ _____

Signature of Participant Date

_____ _____

Signature of Researcher Obtaining Consent Date

Appendix D: Coding Map of Analysis with Categories



Appendix E: Final Thematic Development from Codebook

Final Theme	Description	Categories	Code	Research Questions	Participant Evidence
1. Long term career goals and an interest in the aviation field are motivating factors in student persistence in the program	Multiple participants stated that their career goals and seeing what their future could be like by finishing the program motivated them to continue their enrollment	Career Motivation/Persistence, Career Motivation/Enrollment, Career Motivation, Prior Experience	Persistence motivation, Interest in Aviation	RQ1, RQ1b	P1, P2, P3, P4, P5, P7, P9

2. Curriculum rigor and program structure influenced student experiences.	Several students stated that the transition from the high school to the adult program along with the rigor of the curriculum and exam content were barriers that had to be overcome in order to stay in the program.	Curriculum Challenges, Program Structure, Academic Challenges	Rigor of Curriculum, no way to make up failed courses	RQ1, RQ1a	P2, P3, P4, P7, P8, P9
3. Positive instructor interactions and hands-on learning opportunities contributed to student program retention.	Participants repeatedly described positive interactions with the instructors in the program as evidence of their positive perception of the program. The relationships built with the instructors gave the students	Classroom Experience, Instructor Support, Instructor-Student Interactions, Hands-on learning	Instructor Communication Support, instructor effectiveness of instructional delivery	RQ1c ,RQ1	P1, P2, P3, P4, P5, P6, P8, P9

	motivation and encouragement to persist.				
4. Family influence and support had a positive impact on student success.	Many students stated encouragement and support both emotional and financial were factors in their success in the program.	Family Influence, Family Support, Financial Support, Family Transportation Support	Family Emotional Support, Family Financial Support	RQ1, RQ1b, RQ1c	P1, P2, P3, P4, P5, P6, P7, P8, P9