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Assessing Student Perception and Impact of the Use of In-Class Tutoring Support

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Abstract

Student success and retention have become a top priority for institutions of higher education. Although much research has been conducted to determine what factors may cause a college student to be unsuccessful or leave an institution, no one reason has been identified. While student factors contributing to student success are sometimes beyond the institution's control, providing innovative methods of academic support has been found to assist students in being successful in continuing the pursuit of a degree. The purpose of this study was to assess the impact and student perceptions of the use of an in-class tutoring support on students' academic performance at a community college. This convergent, parallel mixed-methods study used quantitative data to investigate the impact on student course grades and qualitative methods were used to understand students' perceptions of the impact of a support strategy on their performance. Findings suggest that although the direct impact on grades was not clear, students reported the perception that the in-class tutoring support had a positive impact on their grade. Qualitative data was gathered through one-on-one, in-depth interviews. Within and across subject analysis yielded four major themes related to the impact of the in-class tutoring: (a) quality of instruction, (b) access to support, (c) personal barriers, and (d) academic performance. These themes were further organized into 11 sub-themes revealing student perceptions of the impact of the tutoring strategy on academic experience, class participation, and overall performance. As a result of these findings, recommendations for additional research and improved practice are provided.

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Dedication

I would like to express my gratitude to Dr. Dean Goewey, my committee chair, and Dr. Christine Walsh, my committee member. You both have been unbelievably patient and supportive, especially through difficult times. Your valuable insight and encouragement kept me moving forward. To Dr. Kathleen King, thank you for your energetic spirit and incredible insight as I started this process. To Dr. Theresa Pulos, my advisor, thank you for helpful guidance when moments got overwhelming. Thank you to Dr. Linda Evans for helping me to understand the blend of leadership and spirit. To Dr. C. Michael Robinson, thank you for your steady, gentle leadership and for bringing joy to this experience.

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teaching me the importance of hard work and determination. Without those values, this would not have been possible.

Biographical Sketch

Cathleen J. Dotterer is currently the Executive Director of Housing and Campus Services at Onondaga Community College. Ms. Dotterer attended the University of Montevallo from 1995-2001 and graduated with a Bachelor of Sciences degree in Psychology in 1999 and a Master of Sciences degree in Counseling in Higher Education in 2001. She enrolled in St. John Fisher College in the summer of 2013 and began doctoral studies in the Ed.D. Program in Executive Leadership. Ms. Dotterer pursued her research in community college student success under the direction of Dr. Goewey and Dr. Christine Walsh and received the Ed.D. degree in 2015.

Acknowledgements

Abstract

Student success and retention have become a top priority for institutions of higher education. Although much research has been conducted to determine what factors may cause a college student to be unsuccessful or leave an institution, no one reason has been identified. While student factors contributing to student success are sometimes beyond the institution's control, providing innovative methods of academic support has been found to assist students in being successful in continuing the pursuit of a degree.

The purpose of this study was to assess the impact and student perceptions of the use of an in-class tutoring support on students' academic performance at a community college. This convergent, parallel mixed-methods study used quantitative data to investigate the impact on student course grades and qualitative methods were used to understand students' perceptions of the impact of a support strategy on their performance. Findings suggest that although the direct impact on grades was not clear, students reported the perception that the in-class tutoring support had a positive impact on their grade. Qualitative data was gathered through one-on-one, in-depth interviews. Within and across subject analysis yielded four major themes related to the impact of the in-class tutoring: (a) quality of instruction, (b) access to support, (c) personal barriers, and (d) academic performance. These themes were further organized into 11 sub-themes revealing student perceptions of the impact of the tutoring strategy on academic experience, class participation, and overall performance. As a result of these findings, recommendations for additional research and improved practice are provided.

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Chapter 1: Introduction

Introduction

The history of American community colleges is marked by periods of growth in both number of institutions and student enrollment. While recent years have shown a reduction in growth as well as declining enrollment, attending community college remains popular (Bradley, 2011). The American Association of Community Colleges (AACC) (2015) website reports that in the 2013-2014 academic year, 46% of the students enrolled in college were enrolled at a community college. Although nearly half of college students are enrolled in community colleges, Rochford and Mangino (2006) cited that less than 63% of students enrolled at community colleges return for enrollment in the second year. Additionally, national 3-year completion rates for first-time students were approximately 30% in 2010 (Burns, 2010). In recent years, community colleges have experienced scrutiny due to these low completion rates (Jenkins, 2015). Declining enrollment and student attrition create serious issues for community colleges (Siekpe & Barksdale, 2013).

Combined with the challenge of declining enrollment and student attrition, institutions also face dwindling public funding (Bradley, 2012). While the federal government has committed to continued support, the effort to increase degree attainment of 2-year students' funding remains an issue (Siekpe & Barksdale, 2013). It is estimated that during 2004-2009, over 4 billion dollars in federal, state, and local taxpayer dollars went to students who did not complete (Schneider & Yin, 2011). Historically, in order to

obtain funding, large enrollment numbers have been the main priority for community colleges (Smith, Baldwin, & Schmidt, 2015). Cohen, Brawer, and Kisker stated that community colleges will begin to receive funding based on success rates rather than enrollment numbers (2014). This change in the funding model will shift the focus of funding and hold community colleges to a higher standard of supporting their students to completion (Burns, 2010). While open access will remain vital in creating admission opportunities for students, community colleges have an equally important responsibility to address and promote student success and retention (Calcagno, Bailey, Jenkins, Kienzl, & Leinbach, 2008).

In order to confront the issue of student retention, it is critical to understand the issues that affect student attrition. Understanding the factors influencing students' decisions to leave college allows an institution to modify programs, services, and policies to support the students (Siekpe & Barksdale, 2013). Significant research has been conducted on the topic; however, no single reason has been identified as to what leads to student attrition (Lobo, 2012). Tinto (1993) stated that there is a variety of reasons affecting students' decisions to leave college: adjustment issues, academic difficulty, lack of motivation, financial struggles, and poor fit in the institution. While some of these factors are beyond the control of the institution, the institution has a responsibility to provide strategies, resources, and practices that support students through these challenges.

Crosling, Heagney, and Thomas (2009) identified teacher practice as an area that can impact a student's success and retention. Current literature on today's college student challenges the traditional teacher-focused pedagogical approach to learning and claims

that changes in generational perspectives and student needs require adjustments in the instructional foundation (Werth & Werth, 2011). Werth and Werth pointed out similarities among the current generation of students and historical research on adult learners, claiming that the instructional approaches necessary for this population should mirror adult education rather than traditional instruction. Colleges need to develop new and creative ways to provide instruction and academic support strategies that can contribute to academic success. This study examines the impact that an academic support strategy, using an in-class tutor, has on community college student course performance. In addition, it examines the student perspective of the impact of that additional support on their performance.

Problem Statement

A central focus of community colleges is providing access to individuals who may otherwise be unable to pursue college. This core mission of access has been the foundation of the community college public funding formula. Currently, the majority of students enrolled in community college do not successfully complete an academic program (Siekpe & Barksdale, 2013). Given the enrollment and economic challenges community colleges face, those institutions must find ways to improve student success and retention. Without improvement in these areas, institutions will not maintain the enrollment needed to continue to deliver on their mission and remain viable (Catt, 1998).

Theoretical Rationale

The study is guided by two theories related to student learning. Knowles's (1977) theory of andragogy is used to frame the study based on the concepts of adult learning and the importance of interactive learning in the classroom. Vygotsky's (1978) theory of

cognitive development is used to provide the foundational support of the study. Specifically, Vygotsky's notion of *the zone of proximal development* and *scaffolding* as an instructional practice has a direct relation to the specific intervention examined.

Knowles's (1977) theory of andragogy. A review of educational history reveals that the earliest examples of education were led by philosophers such as Confucius, Plato, and Aristotle. The approach to education was inquiry rather than instructional (Knowles, 1977). Knowles stated that by the seventh century, the educational approach changed and emphasis was placed on the development of skills such as reading and writing. During the 12th century, education was separated from the church and continued to target the instruction of the student, and it developed into the pedagogical model that is the foundation of our current educational system (Knowles, 1977). Pedagogy remained the basis of education until after World War I when the adult learner garnered the attention of researchers and educators, revealing a unique learning capacity that was different from children (Knowles, 1977). This realization led to the exploration and establishment of a new approach to teaching, andragogy, which is defined as the "art and science of teaching adults" (Taylor & Kroth, 2009, p. 1).

During the 19th century, a primary leader in identifying the early principles of adult learning was Eduard Lindeman (Minnis, 1975). Lindeman aimed to prompt educational reform based on the principles of adult learning, and to transform learning as a social process rather than a structured instruction. A key claim within Lindeman's work was the introduction of the value of both formal and informal education. This introduction of informal education continues to highlight the difference between the

teacher-directed structure of pedagogy and the learner-led approach of andragogy (Minnis, 1975).

The basic premise of andragogy is that adults learn differently than children, and instruction should be tailored to adult learners (Taylor & Kroth, 2009). While the concept of adult education was researched and written about within various disciplines during the 19th century, Malcom Knowles (1977) is recognized as the person responsible for merging early findings into a theoretical model after 1960 and popularizing the term andragogy (Taylor & Kroth, 2009). Knowles' theory is based upon six key assumptions about adult learners (Werth & Werth, 2011). These assumptions are the foundation of the andragogical approach, and they are categorized as: self-directedness, personal experiences, readiness to learn, orientation to learning, intrinsic motivation, and the need to know (Taylor & Kroth, 2009).

The first assumption, self-directedness, asserts adults' preference for independence rather than being provided with specific direction (Taylor & Kroth, 2009). Conaway (2009) noted that as adults develop a sense of self-concept, they strengthen their sense of responsibility. This assumption of independent learning versus teacher-dependent learning is a critical difference between pedagogy and andragogy. While pedagogy emphasizes that the learner is dependent on the instructor and andragogy shifts that responsibility to the learner, andragogy acknowledges the need for direction from the instructor as long as the value is placed on developing the student's self-directedness (Knowles, 1978). This difference is what strongly delineates the two theoretical approaches and drives the recommendations for practical application in the classroom (Conaway, 2009). Given this difference, learning based on andragogy is an active process

that is led by the student and facilitated by the instructor. This style of instruction is in contrast to pedagogy because it is more interactive and less lecture based (Werth & Werth, 2011).

Knowles's (1978) second assumption relates to the understanding that experiences can become a catalyst for learning (Taylor & Kroth, 2009). Not only can learning be prompted by these experiences, but Knowles indicated that reflecting on these experiences can enrich the learning process for one's self and others (Knowles, 1977). In addition, adults tend to better understand the value of new experiences with regard to learning, which supports the concept of teaching through an active learning process rather than by lecture (Conaway, 2009).

The next two assumptions relate directly to an adult's approach to learning: readiness to learn and orientation to learning. Readiness to learn communicates the fact that, as an individual transitions into adulthood, openness to learning becomes linked to how that growth can impact either social and or personal goals (Conaway, 2009). Orientation toward learning addresses an adult's tendency to center learning on immediate problem solving rather than the approach within pedagogy, which intends to educate for potential future use (Taylor & Kroth, 2009).

The final two assumptions address need and motivation. Motivation of adult learners is explained to be prompted intrinsically and reinforced by those internal factors (Taylor & Kroth, 2009). While external motivators, such as professional advancement and financial benefit might encourage an adult learner, they are never the primary motivation (Conaway, 2009). With regard to the need to know, this assumption articulates that the adult learner seeks to understand the purpose behind the education

prior to beginning the learning process. This understanding of purpose often relates to the internal motivation discussed earlier (Conaway, 2009).

One challenge to the theory of andragogy is the assumption that all adults share the same independent learning characteristics and that all children are dependent learners (Taylor & Kroth, 2009). Taylor and Kroth noted that the inability to clearly separate these learning characteristics challenges the basic assumptions of the theory of andragogy. Additionally, the definition of adulthood offers a wide range of ages and ultimately includes an 18-year-old person in the same category as a 50-year-old person. The applicability of this theory to all ages has not been tested (Conaway, 2009).

The zone of proximal development. The zone of proximal development (ZPD) is defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). With assistance from a more capable person, learners are able to develop skills that are beyond their current abilities. Vygotsky's claim was that a child's potential for learning is the basis for cognitive development. Understanding the child's zone of proximal development provides an individualized plan for cognitive development as it guides instruction to be at the child's specific level. This individualization offers the potential for instruction and support that directly meets that student's unique needs (McLeod, 2010).

Scaffolding is a term often connected to Vygotsky's (1978) theory of cognitive development. Although Vygotsky did not coin the term, the concept is strongly connected to the zone of proximal development. Sometimes referred to as *guided learning*,

scaffolding refers to the modification of the level and kinds of support provided to a child based on the cognitive potential demonstrated by the child. Therefore, stronger support is provided when a child has less potential and less support as the child develops mastery of the task (McLeod, 2010).

Statement of Purpose

The purpose of this study is to understand the impact, and students' perceptions of the impact, of the use of an in-class tutoring support strategy on their academic performance in a selected course. The issue of student success and retention has become an area of concern for all higher education institutions. In addition to the direct impact on the student's ability to pursue their education, student attrition has financial impacts on students, institutions, and the economy (Crosling et al, 2009). It is widely understood that retaining a student who is already enrolled at an institution has greater potential and financial benefit than efforts to recruit new students. Many institutions have responded to this call by incorporating a specific focus on retention into their enrollment-management strategy (Dempsey, 2009). Significant research has been done to identify the factors that influence student retention and degree completion. No one reason has been uncovered, but rather, a variety of factors can impact a student's ability to persist including both student and institutional characteristics (Dempsey, 2009).

As institutions respond to the pressures of high rates of attrition, an examination of teaching methodology and classroom practices is necessary to isolate strategies that may support student success and retention. It is imperative that the classroom provide an environment that fosters engaged learning strategies supports the acquisition of core concepts related to the curriculum. The development of mastery of key concepts underpin

success within a course with strong impact on overall student retention (Crosling et al., 2009). In addition, Crosling et al. noted the importance of a collaborative learning environment, which provides immediate feedback regarding the students' performance, thus addressing needs when they are identified (Crosling et al., 2009).

Research Questions

This study sought to answer the following research questions:

1. What impact does implementing a content-specific in-class tutoring support have on academic performance, as defined by course grade, in two courses required in the Mechanical Technology (MET) curriculum at the College?

2. What do community college students, enrolled at the College, perceive as the impact of a content-specific in-class tutoring support on their completion and academic performance in an MET course?

Potential Significance of the Study

Student retention and attrition may be the biggest issue facing institutions of higher education, affecting university reputation and impacting financial viability (Siekpe & Barksdale, 2013). This issue has national attention as a key part of the Obama Administration's goal to have the United States improve the concentration of college-educated citizens (Schneider & Lin, 2011). Given President Barack Obama's specific goal of graduating 5 million more Americans from community colleges by 2020, it is critical that institutions explore ways to address student attrition through interventions that address student success (Burns, 2010). There are various approaches that an institution can take to enhance the student learning experience and meet the needs of their specific population (Kuh, Kinzie, Schuh, & Whitt, 2005). The Achieving the Dream

(2015) initiative supports this concept by encouraging colleges to be guided by basic principles when developing policies, practices, and institutional efforts aimed and improving student success and retention (Achieving the Dream, 2015). Additionally, institutions involved in Achieving the Dream are instructed to work to improve student success by developmental education and gateway courses through enhanced tutoring and supplemental instruction strategies, among other initiatives. Combined with offering enhanced services, there is a greater demand on community colleges to use evidence-based data to support decision making (Hagedorn & Kress, 2008). Recently named an Achieving the Dream institution, the community college serving as the site of this study has been looking at innovative strategies to improve student academic success, retention, and completion. One strategy implemented has been a content-specific in-class tutoring support targeted at gateway courses within the Mechanical Technology curriculum. The research conducted in this study provides an understanding of the impact this initiative has on student course grade, as well as the student perception of the value of this support strategy, and it has the potential to influence instructional practice in similar courses.

Definitions of Terms

At this time, there is no standard definition for *retention* or associated terms like *persistence* and *attrition*. For the purposes of this study, the terms are defined as indicated:

Attrition – the trend indicated by the number of students who cease enrollment at an institution prior to degree completion.

Retention – the trend indicated by the number of students who persist at the same institution toward goal attainment or degree completion

Student Persistence – enrollment of a person enrolled at a community college from one semester to the next.

It is important to note that the term persistence applies to an individual, while retention and attrition generally apply to a group of individuals (Dempsey, 2009).

Chapter Summary

President Obama has issued a 10-year challenge to increase the number of community college graduates by 5 million students (Obama, 2009). Given President Obama's charge to increase community college graduates, it is important that institutions focus on ways to support student completion. In order to meet this challenge, it is critical for institutions to develop and share strategies that contribute to student progress (Center for Community College Student Engagement, 2012).

The study provides a brief review of the history and mission of community colleges. In addition, it reviews the body of literature and research evaluating the student and institutional factors affecting college student retention. The purpose of this student is to evaluate the impact of in-class tutoring support on students' performance and to better understand students' perceptions of the value of in-class support on their performance in a gateway course required in a technical degree at 2-year institution located in a mid-size city in upstate New York (the College). An analysis of the relevant empirical research literature is examined in Chapter 2. The convergent, parallel mixed-methods approach is outlined in Chapter 3. In Chapter 4, the data analysis process and results of the study are described, along with a discussion of the findings, and the limitations of the study, recommendations for further research, and improved practice and policy are shared in Chapter 5.

Chapter 2: Review of the Literature

Introduction and Purpose

Multiple factors can impact student retention. Community colleges, based on the nature of the mission to provide open access, enroll students that come to their institutions with challenges that affect student success, such as academic under preparedness, financial difficulty, managing full-time work, and family responsibilities (Burn, 2010). While enrolling this population supports the commitment of open access, it increases the enrollment of students coming to the institution with inherent barriers to their success (Burn, 2010). This chapter aims to provide an understanding of the literature and empirical research that addresses the factors influencing student success, persistence, and retention. The literature reviewed provides a framework of understanding that is connected to the purpose and significance of this study.

Review of the Literature

History of community colleges. While community colleges existed before 1946, it was President Harry Truman who elevated the term and transformed the landscape of higher education (Gilbert & Heller, 2013). Prior to this, the issue of higher education had been left to the states to manage. However, the surge in enrollment during this period of time brought national attention to higher education. As a result, community colleges were seen as a strategy for managing the high enrollment number while saving the students money (Carey, 2013). In addition to developing low-cost education, the Truman Commission asserted that the federal government needed to provide financial assistance

to capable and competent citizens for whom the cost of college was a barrier. Combined with the effort to provide access to a low-cost education with federal aid, the Commission also noted that access to community colleges should not be limited by student preparation or educational ability (Gilbert & Heller, 2013).

Soon after President Truman's decree, community colleges expanded not only to meet enrollment numbers but also to respond to community industry needs. The purpose of community colleges was redefined to include vocational education. Additionally, community colleges were intended to be public and located among various communities, making it possible for people in every state to have access to a local community college (Gilbert & Heller, 2013). This history provides a framework to understand the primary mission of access to community colleges.

Student factors related to student success and retention. There are many factors that impact student success and retention (Tinto, 1993). Based on research of the literature, Lobo (2012) identified 17 specific factors that contribute to student persistence and potential withdrawal. Within that list, nine of the factors relate directly to the student: age, gender, financial concerns, lack of preparation, family responsibilities, expectations and perceptions of university life and study, health or personal reasons, living arrangements, learning anxiety, and work issues (Lobo, 2012). While these factors cannot be controlled, it is important for an institution to understand the influences affecting student persistence (Lobo, 2012). Increased knowledge about student characteristics that influence persistence and completion may offer insight into ways to support student success (Burns, 2010).

Studies on transition from high school to college. The difficulty or ease by which a student transitions from high school to college can have a strong influence on student success and desire to continue enrollment at an institution. While many students are able to navigate this transition well, students who are unable to develop strategies to adapt are often unsuccessful (Morton, Mergler, & Boman, 2014). The transition period of freshmen was the focus of the research conducted by Morton et al. (2014). In this study, personal characteristics that might influence a student's ability to manage the transition successfully are evaluated to determine if certain characteristics increase or decrease that challenge (Morton et al., 2014). Specifically, Morton et al. studied the effects of optimism, self-efficacy, depression, and anxiety on students' transition to college.

The correlational analysis using a standard regression of the Morten et al. (2014) study was conducted using first-year full-time students in an Australian institution. A requirement for participation was that enrollment to the institution immediately followed high school (Morton et al., 2014). Morton et al., used a convenience sample of 84 traditionally aged first-year students from the Queensland University of Technology. Specific classes were selected within the school of Psychology and Education to participate. Students within those classes were provided with course credit for participation in the study (Morton et al., 2014).

Students were asked to report demographic information followed by the distribution of a survey tool (Morton et al., 2014). The survey questionnaire was created to assess levels of influences in addition to obtaining the student's self-reported level of stress and transition to campus (Morten et al., 2014). The questionnaire was developed by compiling the following measures: the Life Orientation Test, Self-Efficacy Scale,

Southern Child and Adolescent Mental Health Service Depression and Anxiety Scale, Student-Life Stress Inventory, and the College Adaptation Questionnaire (Morton et al., 2014).

Morton et al. (2104) used descriptive statistics, correlational analysis, and regression analysis to evaluate the data and to understand the interaction between the variables. The results of the Pearson correlational analysis, followed by a multiple regression, showed a significant relationship between self-reported optimism and stress levels. These results indicated that students with higher levels of optimism reported lower levels of stress (Morton et al., 2014). In addition, results indicated a relationship between self-efficacy and successful transition to college, and noted that this could be the result of viewing the transition as a challenge rather than a threat (Morton et al., 2014). Morton et al. also noted that while self-efficacy had a positive relationship with the experience of transitioning to college, it did not have a significant impact on the reported stress levels. Another finding linked higher levels of depression with higher levels of stress and greater difficulty in the transition to college (Morton et al., 2014). Last, Morton et al. reported a significant correlation between students' reported level of stress and transition to the institution. While the findings from the study describe the student factors that can affect student persistence and attrition, the sample size was small and conducted late in the semester. Morton et al. (2014) conducted the survey during the 10th week of the semester and noted that the evaluation of transition to college at that time might have influenced the validity of the results. The researchers suggested future studies to evaluate the factors earlier in the semester in order to have a full understanding across the entire first semester transition (Morton et al., 2014). Morton et al. also noted that offering an opportunity for

qualitative data through written responses from the participants might have offered more insight with regard to student life stress. The opportunity for more open response would have allowed for a richer, more authentic view from the students' perspective of stressors during that period. In addition, providing course credit for the survey might have influence student responses. Finally, the study did not acknowledge or control for depression or anxiety from a clinical or diagnosis standpoint (Morton et al., 2014).

Another study exploring the concept of student transition to college was conducted by Turner and Thompson (2014). In a study of millennial freshman students, Turner and Thompson evaluated the specific needs of the current traditionally aged population to examine the perceptions of freshmen, upper classmen, and non-returning freshmen, to identify contributors of support or challenge during the transition period from high-school to college. Millennial students were defined as students born between the years of 1982 and 2002. Millennial students are widely understood to display certain characteristics associated with their generation. To name a few of the accepted assumptions, millennial students are known to be highly confident, team oriented, sheltered, pressured to succeed, have respect for diversity, experience strong parental involvement, and display a sense of ego (Werth & Werth, 2011). In this study, data was gathered through the use of two instruments to obtain information about the students' experiences and perceptions related to their transition to college (Turner & Thompson, 2014).

Using a qualitative approach, Turner and Thompson (2014) evaluated data obtained via open-ended questions posed to participants in an interview setting. Representing the three different student groups, 30 students were interviewed by

telephone. These students were classified into one of three groups: freshmen, sophomore, and non-returning freshmen. The participants were evenly balanced between each classification, with 10 respondents per group, and they were almost evenly split by gender with 60% female and 40% male. In addition, most of the students were attending college with either merit or need-based financial support (Turner & Thompson, 2014). The convenience sample was selected by email invitation and personal notification via the student services office at the college (Turner & Thompson). Acknowledging and attempting to control against the potential for research bias, the researchers' backgrounds were provided in the results (Turner & Thompson). Reliability and validity were evaluated by having the participants confirm their responses as they were understood by the researchers, which also assisted in reducing the researchers' bias. Interviews were taped and the researchers also provided field notes, and evaluation of these materials led to the identification of themes. In order to be categorized as a theme in the study, 40% or more of the respondents had to indicate a similar experience or idea (Turner & Thompson, 2014).

Through coding of data from the interviews with the students, themes were identified and categorized into four main factors that were found to influence the first year transition: freshman event programming, development of study skills, faculty-student interaction, and support via academic advisement services (Turner & Thompson, 2014). The category most commonly noted was freshman programming. For the purposes of their study, freshman programs were explained as events and activities provided on campus that were targeted to the freshman population, such as freshman orientation or welcoming events. This factor was indicated by 67% of respondents as a key component

to making the transition to college easier (Turner & Thompson). This supports the known importance of providing opportunities for new students to build connections early in their first semester. Developing good study skills was the next highest mentioned factor affecting student transition (Turner & Thompson). This factor was noted less frequently in the non-returning freshman group with only 30% mentioning this issue. The researchers attributed this difference as one stemming from the fact that the existing students who were enrolled in courses might continue to struggle with balance and, therefore, continue to have challenges developing successful study skills (Turner & Thompson, 2014).

Studies on student attrition and retention of traditional students. Much of the research and theory related to student factors regarding attrition or retention has been conducted using traditionally aged students at 4-year institutions (Fike & Fike, 2008). While the results may be generalizable to some of the community college population, institutions must evaluate the needs of their specific student population (Fike & Fike, 2008). Fike and Fike argued that the typical college students at community colleges differ from one at a 4-year university. and thus. cautioned others to assume that the challenges to retention are similar. Based on these beliefs, Fike and Fike conducted research at a community college in West Texas to identify student predictors of first-time students in a community college setting and college student retention.

Fike and Fike (2008) used 4 years of data that was collected from a Texas community college providing a sample of 9,200 students. After review and coding of incomplete data sets, complete records accounted for 8,945 students. This student data was evaluated by two dependent variables of retention defined as: first year fall to first

year spring retention, and first year fall to second year fall retention (Fike & Fike, 2008). The independent variables were based on theoretical assumptions related to retention such as: gender, age, credits enrolled, and financial aid (Fike & Fike, 2008). Descriptive statistics were used to identify the sample demographics by gender, age, credit load, math, and reading level. A multivariate analysis was conducted with coded data. Fike and Fike's research noted a positive correlation between successful completion of a developmental reading course and retention. In addition, there was a positive correlation between students who did not enroll in a developmental reading course. A negative relationship was shown with students who enrolled in the developmental reading course but failed to complete it (Fike & Fike, 2008). Interestingly, the developmental reading course showed an impact only in fall-to-fall retention and not in fall-to-spring retention. The results also showed a negative relationship between credits dropped during the first semester and retention (Fike & Fike, 2008).

One of the major limitations of the study was the need to supplement missing data when information was incomplete. Another limitation was the fact that the data was self-reported and not observed or verified. In addition, since the study did not use an experimental design, there is little ability to determine a causal relationship between the variables (Fike & Fike, 2008). However, the outcomes of the research are helpful in identifying the factors that are specific to community college students and are helpful for institutions in proactively responding to student needs.

Taking the concept of understanding student factors that influence of attrition and persistence further, Hickman (2011) conducted research to determine if there is a way to predict students who present at-risk factors for attrition early in their college career.

Hickman asserted that identification of a student need early could offer an opportunity for institutions to target specific students while also understanding the importance of the first semester academic performance as an indication of attrition (Hickman, 2011).

Hickman (2011) conducted his research using a sample of 1,815 first-semester students at Macomb Community College who had articulated the intention of completion of an associate degree (2011). The variables studied were first-semester grade-point average (GPA), credits completed, and credits attempted. Hickman used two methods for data analysis: classification tree analysis (CHAID) and a confusion matrix. Using classification tree analysis, Hickman was able to create categories and sub-categories, creating two hierarchical prediction models based on the three variables. A major limitation of Hickman's study and proposed model to predict attrition was that community college students' behavior with regard to enrollment was not always semester to semester. The study does not account for the frequent need of community college students to take a semester off in order to manage other priorities such as work or family responsibilities. The researcher recognized the lack of enrollment to attrition without the confirmation of the students' intention not to return and complete their degrees (Hickman, 2011). In addition, at the point of application, all respondents were selected because of their intentions to complete their degrees. The study does not account for students who might have changed their minds and adjusted their original goal (Hickman, 2011). However, Hickman's findings were that students with successful academic engagement in their first semester tended to be at lower risk for attrition, and the researcher suggested that early identification and intervention with these at-risk students might positively impact their persistence and degree completion (Hickman, 2011).

First-generation and first-year college students. Woosley and Shepler (2011)

also discussed the value of a similar predictive approach when dealing specifically with

first-generation college students. Research regarding first-generation students indicates a

higher risk for attrition, which drove Woosely and Shepler's research. The researchers

used Tinto's (1993) longitudinal model of attrition to determine if the factors described

within his model were reflective of first-generation students. This study was conducted

via a survey tool that was administered to first-generation, first-year students at a

medium-sized Midwest public university (Woosley & Shepler).

The research sample was identified by selecting all first-generation, first-year

students. An initial email invitation was sent to 3,581 students requesting their

participation. After two additional follow-up email notifications, 3,051 students

completed the online survey (Woosely & Shepler, 2011). The responses were then

filtered to identify first-generation students and eliminating all others. This reduced the

responses to 1,019 completed surveys, indicating that neither parent had attended a higher

education institution. However, only 804 of those responses were fully completed

surveys (Woosely & Shepler, 2011). Additional data regarding standardized test scores

and demographic information were collected on the 804 students, and they were included

as predictor variables. The online survey responses were based on a Likert scale with

responses ranging from *not at all* to *extremely*. For example, students were asked

questions about how well their adjustment to campus went as well as how motivated they

were in their academic work (Woosely & Shepler, 2011). Factors from Tinto's (1993)

longitudinal model served as the criterion variables, and they were categorized into five

groups: social integration, academic integration, academic integration, institutional

satisfaction, and stress related to homesickness. Pearson correlational analysis results showed no significant relationships between the predictor variables and criterion variables (Woosely & Shepler, 2011).

One limitation of the study was the fact that it was conducted only at a Midwest university in which enrollment is typically traditionally aged students from the region. In addition, the university is known for a highly successful freshman program, which might have influenced the results. Last, given the institution was medium sized, it offers students more opportunities for involvement and thus may naturally support a student's need to build connections and get involved. However, the results of the Woosely & Shepler (2011) study are still valuable in understanding that regardless of parental educational experience in higher education, student needs during the first-year transition remain consistent. The first-year students, including first-generation freshman, identified needs such as making new friends, student interaction, and feeling a sense of belonging (Woosely & Shepler, 2011).

Student sense of belonging and engagement. Through a critical review and compilation of research, Tinto (2012) evaluated the issues of student persistence and retention through the lens of student engagement. Tinto (2012) asserted that student retention is related to students' ability to have social connections and feel a sense of belonging in a social community on campus early in their time on campus. Tinto's research highlights the need for institutions to commit to supporting a student in making these connections and getting involved early. Through his evaluation of the research Tinto challenged institutions to evaluate campus culture, climate, and student support programs to ensure they are focused on addressing student needs. Specifically, Tinto

argued that the research indicates four major elements of a campus that relate to student success: expectations, support, assessment and feedback, and involvement. While this theory addresses the concept of student retention and identifies major reasons for student departure, it tends to focus more on the student experience rather than the learning style and classroom performance of the individuals. In addition, the responsibility of retention is heavily placed on the institution to create an environment that fosters critical student experiences (Tinto, 2012).

Baruch-Runyon, VanZandt, and Elliot (2009) researched student engagement from the perspective of the student rather than evaluating the student. Through a hermeneutical model of research, data was evaluated to identify themes among the participants that related to their transition experience in their first year of college. The research included a multiple-layered qualitative approach that began with intake interviews, followed by workshop participation and focus groups (Baruch-Runyon et al., 2009). Questions asked through the intake meetings were predetermined, while questions asked during the follow-up meetings were modified based on themes detected in the earlier interactions. Baruch-Runyon et al. (2009) indicated the questions and follow-up procedures reduced the potential for researcher bias, but they offered an opportunity to validate the themes identified in the earlier stage. The following questions were asked during the intake interviews.

1. Have you had any previous group or workshop experience?
2. How would you describe your level of stress now?
3. How do you usually respond to change?
4. What is your cultural/community background?

5. What do you anticipate being most challenging this semester?

6. What strengths, coping skills, and supports do you bring with you?

The follow-up interviews asked:

1. What has been particularly challenging during the semester?

2. Have you begun to make connections with other students and faculty?

3. Have you used any of the coping skills/communication approaches introduced in the workshop?

4. If you had a magic wand and you could change one thing about your experiences here, what would that be?

5. If things changed here, what would you want to keep the same?

While Baruch-Runyon et al. (2009) placed the emphasis of their research on the student perspective, they also included residential staff who worked closely with the first-year students. The sample size was small, beginning with a participant group of 13 undergraduate students and two staff members at the initial intake. The participant pool diminished to six undergraduate students and two staff members by the second follow up via focus groups (Baruch-Runyon et al., 2009). Data collected was coded into categories created by the researchers and then used to identify themes within those categories. One theme Baruch-Runyon et al. (2009) noted was student engagement through connection of other students and faculty. Two of the primary themes that emerged within the discussion among the interviews and focus groups were challenges in finding opportunities to meet other students and difficulty balancing schoolwork with the desire to socially engage (Baruch-Runyon et al., 2009). The researchers then used the themes identified to articulate "preconditions for successful engagement" (Baruch-Runyon et al., 2009, p. 39).

Baruch-Runyon et al. asserted that institutions should aim to create these preconditions in order to support successful student engagement. Application of this data is not generalizable as it was collected with a small sample size and in a specific institution setting.

Soria and Stebleton (2012) explored student engagement as it related to first-generation students. Their study sought to compare the retention of first-generation students, defined as students from a family with no parent having earned a baccalaureate degree, and non-first-generation students. Data was collected through an online survey. The questions were focused on four themes: academic engagement, community and civic engagement, global knowledge and skills, and student life and development (Soria & Stebleton, 2012). The survey was administered by the University of California at Berkeley to 28,237 students who were enrolled in the spring 2010 semester at a large university in the Midwest (Soria & Stebleton, 2012). Of 5,364 first-year students, 1,864 responded to the questions on the survey (Soria & Stebleton). Soria and Stebleton controlled for multiple demographic variables in the analysis of their data.

Data collected in the study was evaluated through a logistic regression test and t-test (Soria & Stebleton, 2012). Logistic regression was used to predict retention from the first year to the second year while controlling for student demographics. A t-test analysis was used to evaluate the differences between first-generation students and non-first-generation students regarding the noted themes. Results indicate that first-generation students reported lower student engagement with pB < .05 (Soria & Stebleton, 2012). More specifically, first-generation students reported having lower involvement in class discussions, asked fewer questions, and shared fewer ideas in the classroom (Soria &

Stebleton, 2012). An interesting finding within the research was that the evaluation of the sense of belonging was related to students' intentions to return for a second year with pB < .001. Soria & Stebleton (2012) found that sense of belonging had a positive relationship with academic engagement, suggesting that students who have a stronger sense of belonging will be more involved in the classroom. Soria and Stebleton suggested that institutions should aim to develop a sense of belonging among first-generation students early in their enrollment in order to build connections to the community. While the sample was large, the research was done at one public university in the Midwest, and it may not be representative of all first-generation students (Soria & Stebleton, 2012).

Morrow and Ackerman (2012) found conflicting results through their research on sense of belonging and impact on retention from a student's first to second year. Out of a potential 2,039 first-time enrollees, 960 first-year students were asked to participate in the study (Morrow & Ackerman, 2012). This sample was selected because the students had previously participated in surveys administered on campus relating to the topic of first-year experience. The sample of students completed a survey providing information about their experiences during their freshman year. Email reminders were sent to non-responders and letters were mailed to their home addresses.

With a total of 114 respondents, Morrow and Ackerman (2012) used three measures to evaluate a relationship between sense of belonging and retention: sense of belonging scales, academic attitudes scale, and self-reported intention for completion. Initial analysis of the data was descriptive and conducted to identify outliers, incomplete responses, and coding errors. Once the data was prepared, data analysis used multiple regression, correlation, and logistic regression (Morrow & Ackerman, 2012). To measure

the relationship with student retention and each scale, multiple regression analyses were performed.

Morrow and Ackerman's (2012) findings partially supported the research hypothesis that higher levels of sense of belonging are related to reported intent to return for a second year. Morrow and Ackerman anticipated a significant relationship between intention for completion and second-year enrollment, but the results were not significant with $p > .05$ (Morrow & Ackerman, 2012). Instead, the researchers found a significant relationship between peer support and fall-to-fall retention. Also, results show a positive relationship between motivational attitudes and retention, but no significant relationship between sense of belonging and intention to persist existed. This was counter to the researchers' original hypothesis and suggests a cause for additional research (Morrow & Ackerman, 2012). While these results cannot be generalizable to all students at all universities, it does suggest that further research could assist with identifying which non-cognitive factors influence student retention. With this knowledge, instructors may be able to influence first- to second-year retention through specific initiatives tailored to address those factors (Morrow & Ackerman, 2012).

Institutional factors related to student success and retention. While it is important to understand that student factors have a significant influence on success, it is counter to the community college mission of open access to consider adoption of a selective-admissions process (Burns, 2010). Therefore, open access means that students of all needs are admitted, and institutions must take responsibility for addressing the issue of student persistence and retention. Lobo (2012) identified eight specific factors that impact student persistence and potential withdrawal related to these institutions. The

factors identified were: teaching and learning style, course assessment, student mentoring, dissatisfaction with the university, unmet expectations of the university, academic struggles, unsuited courses or curriculum, and social and academic integration. Institutions should look at the factors they have control over and develop strategies to reduce the potential negative impact on student persistence (Lobo, 2012). Because of the negative impact student attrition has on an institution, it is important to understand how the institution demographics and classroom practices might contribute to developing an environment that supports student success.

To offer insight into what may influence a student to leave based on institutional factors, Nadelson, Semmelroth, Martinez, Featherstone, Fuhriman, and Sell (2013) studied student expectations, looking specifically at how those expectations impact students' experiences, continued attendance, and overall success. Nadelson et al. (2013) asserted that unmet expectations may contribute to greater attrition, thus, they should be investigated further. Using a sample of 351 first-year student participants from a metropolitan research university, Nadelson et al. investigated how the expectations of the students compared to reality. The initial measure was a demographic survey that collected basic information regarding credits taken, age, ethnicity, major, home county, and parental educational experience. This demographic survey was conducted to provide a means to collect groups for further analysis (Nadelson et al., 2013). Using a 5-point Likert scale, participants were asked to rate their responses to a collection of questions relating to student expectations. The data was evaluated to identify strength or correlations between the variables (Nadelson et al., 2013). One finding of the study showed a significant correlation between intrinsic reasons, such as career or interest in a

topic, and the decision to attend a specific institution. Results also show that out-of-state students were more positive about social interactions, athletics, and university programming. Nadelson et al. suggested their findings may offer insight for institutions to appropriately structure their services and allocate resources to appropriately meet the expectations of students in specific areas.

Institution demographics related to student success and retention. In an effort to determine if institutional characteristics impact student completion, Calcagno et al. (2008) evaluated data to identify possible correlations between institutional details and student success. Although there is rich data evaluating institutional programs and services and the effect on student persistence, limited data exist on the evaluation of institutional characteristics and the potential influence on retention.

Through a quantitative study of data collected by the National Longitudinal Study of 1988 and Integrated Postsecondary Educational Data Systems (IPEDS), Calcagno et al. (2008) researched student persistence related to basic characteristics of an institution. The sample consisted of 2438 students from 536 community colleges (Calgano et al., 2008). The participant group was divided into two subsets: students who began higher education at a community college and students who entered higher education with the goal of completing an associate degree (Calgano et al., 2008).

Using descriptive statistics, this correlation analysis found a negative relationship between institution characteristics, such as institution size and full time faculty numbers, indicating that institutional demographics can have an impact on student persistence (Calcagno et al., 2008). Using a multiple regression design, data show that students entering medium and larger sized institutions were between 12 and 14% less likely to

complete compared to students at small institutions (Calcagno et al., 2008). Regarding

faculty, the results showed that a higher proportion of part-time faculty was linked to

lower rates of success. Results indicated that community college students attending

institutions with a higher ratio of part-time faculty were between 15 and 22% less likely

to complete (Calcagno et al., 2008). Although the sample size was large and represented

over 536 community college campuses, the data collected in 1988 may not easily be

generalized to today's community colleges (Calgano et al., 2008).

Chen (2012) conducted a similar study exploring the influence of institutional

characteristics on college dropouts. The purpose of Chen's study was to identify specific

institutional characteristics that influence student risk for attrition. Chen used a multilevel

event history model by looking at longitudinal and hierarchical data to understand the key

factors influencing dropouts (Chen, 2012). Chen's study sought to answer two questions

regarding student drop outs: (a) "How do student level variables predict student dropout

over time from their first institution?" (p. 490) and (b) "How are the various institutional-

level factors related to student dropout over time after controlling for student level

predictors?" (p. 490). By understanding both student factors and institutional

characteristics, colleges are able to develop institutional policy and adapt practice in an

effort to address the issue of student attrition (Chen, 2012). Chen used data from the

beginning IPEDS. Limiting the sample to fall 1995-1996 first-time, full-time, degree-

seeking students yielded a sample size of 5,762 students who attended 400 four-year

universities. Descriptive statistics were used to classify demographic information, that is,

institution size, private versus public, etc. (Chen, 2012). A fully unconditional model was

used to analyze the variation across institution size and student dropout rate. The results

were insignificant, indicating wide variability among the 400 institutions (Chen, 2012).

Counter to Calcagno et al. (2008), Chen found no relationship between institution size and student dropout rate. Chen's research analysis was conducted by controlling for student variables. When results were unexpected, the analysis was conducted again without controlling variables. Results between the two were consistent, indicating controlling for student variables was not necessary (Chen, 2012). Finally, Chen used a sensitivity test in order to evaluate the data acknowledging an outlier institution. Results of that analysis were consistent with previous results. Chen's research did find a negative relationship between institutional expenditure on student services and dropout rates. This indicates that institutions that placed a higher financial priority on student services had lower dropout (Chen, 2012).

Studies on student services related to attrition and retention. The idea that institutional priority on student services may impact student success and persistence was also studied by Jenkins (2007). In his study, Jenkins sought to evaluate his hypothesis that community colleges are more effective in promoting student success when the institution prioritizes student support programs and services (Jenkins, 2007). Jenkins used a regression analysis to estimate the effect an institution had on the likelihood that students would achieve one of the following: complete of a degree, transfer to a public university, or persist at the institution for 3 years. This analysis was conducted on transcript data from 150,000 students seeking a degree in a Florida community college (Jenkins, 2007). Once the data was compiled, six institutions were selected for field research: three with results showing a high impact and three showing low impact.

This qualitative field research explored how each institution structured its student services, focused on issues of retention, and provided support for minority students (Jenkins, 2007). During the field study, each institution was assigned a ranking for categories of institutional effectiveness: well developed, developed, weak, or non-existent. Based on this ranking method, results show that institutions that were classified as high impact had more well-developed institutional effectiveness strategies. Examples of these were institutional culture supporting retention and student success, existence of committees contributing to continuous improvement, and the use of data to identify new initiatives (Jenkins, 2007). Although the methodology to identify the field experience sites was thorough, the sample size was too small to be generalizable (Jenkins, 2007).

Student learning: Involvement with faculty and the classroom environment. While experiences out of the classroom can support a student's transition to higher education and influence persistence, it is widely understood that involvement with college faculty can have a positive impact on the retention of students (Tinto, 2012). Crosling et al. (2009) stated that the student experience in the classroom has a significant impact on retention. It is important to note this influence is within an institution's control, and modifications in this area could have an impact on the persistence and retention of students.

The role of the professor is widely understood to have an impact on student learning. In an effort to understand more deeply how students perceive the influence of an instructor on student learning and persistence, Schmidtke (2009) conducted research on the subject. Schmidtke's study focused specifically on American Indian students attending the South Central Institute of Technology in eastern Oklahoma. As a technical

college, students attending this institution are enrolled in associate of applied science degrees, which are career-focused curriculums. Schmidtke explained that the institution was selected as the site for the research study because of the high graduation rate for American Indian students combined with the commitment of the institution to improve the graduation rate of minority students. The sample was made up of 17 selected students in the last semester of enrollment prior to graduation. The assumption of the researcher was that students nearing completion would have a better understanding of the relationships and experiences that might have contributed to their success (Schmidtke, 2009).

Qualitative data was collected through personal interviews using a standardized list of questions. Flexibility in the interview was afforded through a tree-and-branch model approach, which allowed for follow-up questions when appropriate (Schmidtke, 2009). Rather than an evaluation of the services, the questions were open ended and inquired about the students' personal perceptions and experiences (Schmidtke, 2009). All interviews were recorded and transcribed, and themes emerged from the responses (Schmidtke, 2009). Through the study, Schmidtke found that one of the major influences to students' success, as self-reported by the participants, was the attitude of the instructor. Participants noted that a professor who seemed enthusiastic had a positive impact on their success. Enthusiasm was described through behaviors such as encouragement, enjoyment in the classroom, positive feedback, respect for student personal challenges, and availability to students (Schmidtke, 2009).

In addition to the instructor's attitude, participants reported that another major influence was the instructor's approach, noting that hands-on learning was most effective

(Schmidtke, 2009). This collaborative style of learning was preferred as it created a sense of community in the classroom. However, participants reported that while the collaborative learning was preferred, group-graded projects were not preferable as the students did not want to obtain grades based on another student's performance (Schmidtke, 2009). Related to instructional style, results also showed a preference for clearly provided instructions for coursework, providing full information prior to an assignment or problem-solving activity, along with availability for support through the process. The desire for hands-on learning is likely related to the institutional focus on applied curriculum as a technical college.

Schmidtke's (2009) results indicate a preference for a learner-centered style of instruction with problem-solving strategies as long as instructor support was provided. However, these findings may not be generalizable to all students in higher education. A major limitation of the study is the small sample size made up of homogenous students. Schmidtke's research was conducted with the focus on American Indian students. The lack of diversity in the respondents limits the application of the findings to other populations (Schmidtke, 2009).

Crosling et al. (2009) also researched the influence of the instructor by focusing their study on teacher practices that promote quality student learning. Crosling et al. identified specific methods of instruction for their study including: content relevance to students, collaborative learning opportunities, and adaptation of instruction based on student feedback. Weaver and Qi (2005) noted the importance of active participation in the classroom but asserted that creating that environment is a challenge. Crosling et al. (2009) discussed this challenge in detail by describing how growth in higher education

has created an environment promoting lecture-based instruction by encouraging large class size. While the lecture approach meets the need of the larger number of students, it does not create opportunity for the teacher practices noted above. Weaver and Qi (2005) explored this issue further through their research of student perception and participation regarding the organization of the classroom.

In their research, Weaver and Qi (2005) viewed the classroom as a social structure and evaluated the impact of the formal and informal influences within the organization of the class. The formal structure was described through the inherent rules of a classroom: instructor as leader, orderly environment, and discussion focused on goals and outcomes (Weaver & Qi, 2005). Weaver and Qi explained that informal influences refer to the unspoken rules, norms, peer relationships, and fear of judgment and disapproval that students must learn to manage successfully in order to fully engage. In their research, Weaver and Qi explored how students felt the informal and formal influences affected their classroom participation.

Weaver and Qi (2005) surveyed 1805 students at a medium-sized institution located in an urban environment in the Midwest. The questionnaire consisted of 233 questions that inquired about student experiences with teaching and learning. The sample was selected from all enrolled students during the spring 2000 semester. A purposive sample was selected to represent the larger population proportionally (Weaver & Qi, 2005). In addition, effort was made to capture students from all courses as well as evening students. Finally, the researchers eliminated the possibility for duplicate entry by dismissing students from class if they had already had completed the survey in another

course (Weaver & Qi, 2005). Weaver and Qi removed incomplete surveys, which reduced the sample to 1550 participants.

Using a path model analysis, Weaver and Qi (2005) found that there was data to support the notion that the social structure of the classroom influenced the dependent variable, student class participation. One finding indicates that the fear of disapproval was a major influence on students' participation (Weaver & Qi, 2005). Weaver and Qi suggested that faculty adjust the formal setting of the classroom in order to reduce this anxiety. In addition, fostering an environment of community and collaboration could contribute to a more comfortable environment for participation (Weaver & Qi, 2005). Another noteworthy finding was that interaction with faculty out of the classroom had a direct and indirect impact on students' self-reported willingness to participate in the class (Weaver & Qi, 2005). Since the research was done via student reporting rather than observation, Weaver and Qi acknowledged the potential for the data to be different from what others may perceive.

Tinto (1997) also conducted research to evaluate if the classroom environment influenced student success. Tinto argued that, at that time, research and practice left student retention as an issue for the student affairs professionals. While Tinto noted the depth of research conducted within the classroom, he clarified that much is related to student learning rather than student retention, suggesting that a linkage between the two is necessary (Tinto, 1997). In his research, he examinee a specific program that was offered at Seattle Central Community College with the purpose of evaluating how living-learning communities influence student persistence (Tinto, 1997). The living-learning community program offered an opportunity for students to experience a learning

environment that was shared among the same group of students, including registration, that was in the same section of courses that related to a common theme. Tinto's (1997) research was conducted using a longitudinal survey and a qualitative case study. Both the first-year students who participated in the program and a control group in comparison courses comprised the sample. Initial questionnaires were provided during the second week of the semester to collect data on student demographic information, attributes, and background. A follow-up questionnaire was distributed during the last two weeks of the semester and requested data on in- and out-of-class activities, perceptions of the institution, and expectations of persistence and future enrollment in the institution (Tinto, 1997). Gift certificate incentives were offered to promote responses, and the promotion resulted in 517 initial questionnaires, which were returned. Of the follow-up questionnaires, 287 students responded. Additional data was retrieved on these respondents the following fall semester regarding enrollment, grade-point average, and successfully completed credits. The data was analyzed in multiple ways (Tinto, 1997). Descriptive statistics were used to compare the student attributes, experiences, and outcomes, and Z-tests were used to evaluate statistical significance. Regression analysis evaluated relationships between attributes and outcomes over time (Tinto, 1997). Tinto included a qualitative case study to examine the students' perspective of how participation in the program affected their learning. The research was conducted through direct observation of the program, interviews, and document review. The interviews were conducted with over 45 students and staff via scheduled interviews that were conducted via telephone and in person (Tinto, 1997).

Tinto's (1997) findings regarding learning communities reinforced the theoretical basis for the development of these types of programs. Results noted student perceptions indicating a stronger relationship with peers, faculty, and administrators. With each group, results were statistically significant. The findings also indicated greater retention of students participating in a learning community (67%) compared to non-participants (52%). Through the qualitative research, students also reported that the collaborative pedagogy provided greater depth to the class material and offered more opportunities for engagement and connection of personal experiences with course content. Last, the comparison of those participating in the community versus those not involved showed greater grade-point averages (Tinto, 1997). Although outdated, this research study points out the importance that instruction and course delivery can have on student experience and success.

Student learning: learning styles and instructional strategies. Rochford and Mangino (2006) expanded Tinto's (1997) research by arguing that instructors must be flexible in their teaching practice in order to conform to student learning styles. Rochford and Mangino argued that tailoring instruction to address specific learning styles, that is, tactual or kinesthetic, can foster an environment with greater student engagement. In the study, Rochford and Mangino hypothesized that learning styles differ between remedial students and education majors. Rochford and Mangino's research evaluated student learning styles in an effort to understand if those preferred styles affect student performance. Two participant groups were created totaling 176 participants. One group of participants were education majors who were registered in all credit-bearing courses, while the other group comprised students who were placed in remedial reading and

writing courses (Rochford & Mangino, 2006). A convenience sample was used with students volunteering to participate. Participants were asked to complete the Productivity Environmental Preference Survey, which identified their learning style. Participant grade-point average and scores on standardized test were then collected (Rochford & Mangino, 2006).

By use of a Pearson chi square, data was compared to look for significant differences between the groups. The results proved a significant difference in learning styles between the education majors and the remedial class students. Through correlational analysis, learning style preferences were identified for each group, indicating that the remedial students had a tendency for tactual and kinesthetic learning (Rochford & Mangino, 2006). Although not the primary purpose of the study, another result regarding auditory learners is notable. While 40% of the education majors and 37% of the remedial majors are auditory learners and could manage well with a sit-and-listen lecture, approximately 60% would not retain the information from that style of instruction (Rochford & Mangino, 2006).

Hurst, Wallace, and Nixon (2013) evaluated the experience of students through their own perceptions of courses that included student interaction as a key element in the instruction model. Based on the constructivist assumption that knowledge is acquired by building upon already obtained knowledge and understanding, Hurst et al. (2013) explored the perceptions of students participating in a course with learning strategies that were identified to promote student interaction (Hurst et al.). In a study involving 45 students enrolled in summer courses, Hurst et al. studied the student perceptions of the value of student interaction in a particular course. Three courses were selected for

participation, and at the end of each class, students were asked for immediate feedback on the experience by writing answers to three questions (Hurst et al.). The questions were focused on the students' perception of how the student interaction affected the learning in class by asking what the student learned about collaboration and what they learned about the content through the collaboration with other students during that lesson. The responses to these questions were compiled by course, evaluated collectively, and classified by themes. (Hurst et al., 2013).

In all three courses, students acknowledged a connection between the student-interaction activities and their learning, with 80% of the students reporting the interactions enhanced their learning (Hurst et al., 2013). The research indicated that students not only perceive value in a teaching style that incorporates social interaction, but they feel it assists with greater understanding of the content. A limitation of the study was the small and narrow sample size. All students participating in the study were in the teacher-education program, so the results are not generalizable to all students (Hurst et al., 2013).

The concept of using alternate approaches to conventional curriculum was further researched in the Schmidt, Rotgans, and Yew (2011) study on problem-based learning. Problem-based learning in the study was defined by use of problems to promote learning, small group collaboration, limited lecture, student-led learning, self-study, and a tutoring or mentor model. The concept was that through focusing on a problem and utilizing the strategies for addressing the problem, student's engagement was stronger and learning becomes a layered process of inquiry and solution (Schmidt et al., 2011). While there is much written about the concept, Schmidt et al., used an approach the authors referred to

as a *micro-analytical approach* to evaluate the support strategies that are often used with this instruction and to identify the learning process within the classroom (Schmidt et al., 2011). The micro-analytical approach is as a method in which the same questionnaires are administered at different times of the semester and compared against the other questionnaires as well as against the final outcome (Schmidt et al., 2011). Schmidt et al. test two hypotheses. First, the activation-elaboration hypothesis would indicate that as a student begins to experience learning through these methods, they are better positioned to identify gaps in their knowledge, which prompts greater learning. Second, the situational-interest hypothesis would indicate that students may be motivated by the problem itself and thus pursue greater knowledge on the subject matter (Schmidt et al., 2011).

Using descriptive statistics in their study, Schmidt et al. (2011) confirmed that a comparison between problem-based learning and conventional curriculum indicated greater learning results in a problem-based learning setting. The mean levels of situational interest were consistently higher among the problem-based learners, averaging results between 3.52 to 3.80 compared to the direct-instruction group results that ranged from 2.79 to 3.28 (Schmidt et al., 2011). The researchers also noted that when reviewing data and controlling for differences, findings suggest problem-based learning has "robust" effects on knowledge development and performance (Schmidt et al., 2011, p. 802).

Student learning: freshman seminar courses related to student success. Another classroom approach that is based on creating an environment focused on successful student transition in the development of freshman seminar courses. The intention behind offering this course was that through the class format, students would

experience immediate strong connections with the faculty and peers, creating a support network within the classroom setting, while focusing on issues directly related to the transition to college (Potts & Schultz, 2008). In the classroom settings, learning was often student led, and practices in the classroom created an interactive environment, using strategies such as collaborative learning, problem solving, cohort development, and personal reflection (Potts & Shultz, 2008).

Potts and Shultz (2008) studied the effects of participation in a freshman seminar course on retention and student performance, as measured by GPA at a public university in a metropolitan setting. The sample was the incoming fall 2000 class enrolled in the business college (Potts & Schultz). Of 1126 students identified as entering the university as first-time freshman, 223 were selected from the business curriculum for participation. The final sample was divided into subgroups to identify participants by the involvement they had in the program and in an academic cohort model program. The subgroups were categorized as freshman seminar without academic cohort, freshman seminar with academic cohort, and control group with no intervention (Potts & Schultz). Of the 223, 69 were in both cohorts, 30 were enrolled in the freshman seminar only, and 124 were students selected at random for comparison (Potts & Schultz, 2008).

The results of the ANOVA tests show no statistically significant differences among students. T-tests of retention rates show no statistically significant differences (Potts & Schultz, 2008). When comparing retention over eight semesters, percentage of information retained was approximately 68% for students in both cohorts, 57% in freshman seminar only, and 66% for control group. With regard to GPA, the results were similar, with average GPA reported at 2.90 for students in both cohorts, 2.75 in freshman

seminar only, and 3.1 for the control group (Potts & Schultz). Understanding that this business college accepted most students with an ACT score of 22, classifying them in a high school ranking of 40% or higher, the researchers acknowledged that the results might not appropriately reflect the value of the intervention. Potts and Schultz reevaluated the data through the lens of at-risk students in order to understand if there were any statistical differences with a population identified as entering college with challenges. At-risk students were identified by meeting one of the three criteria: students not residing on campus, students admitted without meeting the ACT requirement, and students admitted without meeting the appropriate high school ranking (Potts & Schultz, 2008). The results within the at-risk population showed much different relationships than the data from all students. For students living off campus or with a high school ranking of below 40%, the difference between the freshman seminar participants and the control group were statistically significant. The results of the study are important as they show the value of the freshman seminar concept specifically for students identified as at-risk (Potts & Schultz, 2008).

Zeidenberg, Jenkins, and Calcagno (2007) also researched the effectiveness of a freshman seminar course on student success. In their study, Zeidenberg et al. (2007) sought to provide an analysis of the relationship between the freshman seminar course and student outcomes in an effort to validate previous research indicating a strong relationship. However, previous research focused on students that had successfully completed the freshman course. Zeidenberg et al. chose to investigate the effect of enrolling in the course rather than completing college.

Using a logistic regression Zeidenberg et al. (2007), the study was controlled for student demographic information including: race, gender, age, and high school completion. With a sample size of approximately 37,000 students, Zeidenberg et al. evaluated the academic progress of the students and identified if enrollment in the freshman seminar was indicated on the transcript Results of the study reinforce that enrollment into a freshman seminar made a student 8% more likely to earn a credential (Zeidenberg et al., 2007). Minority students showed a similar result among the students enrolled in both freshman seminar and at least one remediation course (Zeidenberg et al., 2007).

One limitation of the study was that there was no control for socioeconomic status or student motivation. Both topics are known to have a correlation to student persistence and success (Zeidenberg et al., 2007). Failure to control for these factors limits the practical application of the results obtained during the survey. However, there was a strong correlation between registration for the student success course and completion, transfer, and persistence. The researchers noted this study was done to evaluate correlation not causality (Zeidenberg et al., 2007).

Student learning: use of a tutor. Thomas, Bell, and Shoulders (2013) researched the impact of instructional interventions, using student tutors within courses that are often associated with low success rates. The purpose of their study was to evaluate how the use of diagnostic testing, combined with peer tutoring, enhanced learning and influenced course test scores. The diagnostic tool was a computerized program that required a student to pass specific levels prior to advancing to the next topic (Thomas et al., 2013). The tool included the use of the peer tutors to evaluate the student work and determine

the completion of levels. Thomas et al. hypothesized that students participating in the course using diagnostic testing and peer tutors would earn higher than average scores as well as higher than average final course grades. Data supported these hypotheses indicating that students participating in the intervention were averaging a 76.47 score compared to the control group at a 63.20 average score. Using a *t*-test, data was analyzed and show that the students participating in the experimental course earned higher than average exam scores with an average GPA of 2.58 compared to the control group at 1.60.

A similar approach to instruction with peer support was researched by Turkish, Greive, and Cozens (2014). In their study, they evaluated a program in which the instructor was supported by a *co-teacher mentor* to focus on student satisfaction and retention. The purpose of the case study was to evaluate the effectiveness of this model and the impact on student retention (Turkish et al., 2014). In the study, the co-teaching mentor was identified to be a Masters/PhD level employee in a first-year coordinator position at the institution that was set as the site for the case study. The faculty member was a tenured instructor with 12 years' teaching and research experience but with little experience working with large classes of first-year students. The course delivery was restructured based on feedback from previous instructors and students. This restructuring incorporated the co-mentor model (Turkish et al., 2014). Within the restructured format, the faculty member became more of a teaching facilitator, with content delivery focusing more on class participation. In the new structure, the co-teaching mentor facilitated field trips, observational experiences, small group work, and greater use of technology, specifically social media.

The results of the co-teaching model were positive with satisfaction surveys indicating an average rate ranging from 94.9 to 98.7% satisfaction over the 4 years reviewed. These averages were higher than the benchmark average of the institution, which was 80% (Turkish et al., 2014). Retention rates showed a similar result with rates for first years in the co-teaching model at 90 to 93% compared to the institution baseline at 80 to 83%. Although the results indicate a successful case, the obvious limitation was the lack of generalizability due to a small and specific sample size. Turkish et al. (2014) suggested the use of the model as a method to improve student results while maximizing human resources, but evaluation at individual institutions would be necessary.

One major limitation of the Thomas et al. (2013) study was the inequity in the amount of tutoring used between the control group and intervention group. Participants of the control group did not access tutoring services. Because of this, the researchers acknowledged that the peer tutoring alone may have had an impact on the students' grades (Thomas et al.). In addition, the positive improvement may have simply been a result of the increased attention to the subject and studying habits (Thomas et al., 2013).

Chapter Summary

Given the enrollment and economic challenges community colleges face, institutions must find ways to improve student success. Tinto (2012) utilized his research to highlight the severity of the issue and offer recommendations for institutions. He noted completion rates at 63% from 4-year institutions and less than 40% for community colleges. Through his evaluation of the research, Tinto challenged institutions to evaluate campus culture, climate, and student support programs to ensure they are focused on addressing student needs (Tinto, 2012).

Without higher retention rates and lower attrition rates, institutions will struggle to remain viable (Catt, 1998). Burns (2010) noted that community colleges have not had the practice of using evidence-based literature as a basis for decision making. This shift in focus will require institutions to develop appropriate efforts and programs to support improved student retention (Kanoy & Bruhn, 1996). In addition, institutions will be required to evaluate the needs of their students, the factors that contribute to their retention, and to develop programs to support students through to completion. While institutions often look to the student affairs organization to address issues of retention, it is important for every aspect of the college to take responsibility for student persistence (Tinto, 1997). Given the research related to the impact the classroom environment, teacher relationship, and course interventions can have on student persistence, additional research focused on the community college environment would be helpful for driving policy, practice, and teaching methodology. Burns (2010) summarized this by stating:

> Inquiry and the scholarship of teaching and learning can aid community colleges in generating accountability evidence as well as pedagogical solutions to meeting the needs of students. Generating evidence of student learning and knowledge of the variables influencing student success presented in the research literature can point leaders and practitioners to innovative programs, pedagogies, and policies that support student goal attainment . . . . (p. 60)

Rochford and Mangino (2006) supported this premise and stated that evaluation of methodology is timely given the focus on student retention and the increased occurrence of student withdrawal as a result of students' failure to know how to learn and instructors' inflexibility with meeting the different learning needs (2006).

Chapter 3: Research Design Methodology

Introduction

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Burns (2010) noted that community colleges have not had the practice of using evidence-based literature as a basis for decision making. This shift in focus requires institutions to develop appropriate strategies and programs to support improved student retention (Kanoy & Bruhn, 1996). In addition, to improve student retention institutions will be required to evaluate the needs of their students, the factors that contribute to their retention, and develop programs to support students to completion. While institutions often look to the student affairs organization to address the issues of retention, it is important for every aspect of the college to take responsibility for student persistence (Tinto, 1997). Given the research related to the impact that institutional factors, classroom environment, teacher relationship, and course interventions can have on student persistence, additional research focused on the community college environment

would be helpful for driving policy, practice, and teaching methodology. Burns (2010) summarizes this by stating:

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Rochford and Mangino (2006) supported Burns and stated that evaluation of methodology is timely, given the focus on student retention and the increase occurrence of student withdrawal as a result of students' failure to know how to learn and instructors' inflexibility with meeting the different learning needs.

To study the impact of a content-specific in-class tutoring support on the students' performance and experience in the course, this study used a convergent, parallel mixed-methods approach. Quantitative data was gathered to conduct a comparative analysis using course grade data. One-on-one, in-depth individual interviews were used to collect qualitative data. Interviews were face-to-face and audio recorded. After being transcribed, the data was analyzed through a qualitative coding process in order to identify key themes.

This study sought to answer the following research questions:

1. What impact does implementing a content-specific in-class tutoring support have on academic performance, as defined by course grade, in two courses required in the Mechanical Technology (MET) curriculum at the College?

2. What do community college students, enrolled at the College, perceive as the impact of a content-specific in-class tutoring support on their completion and academic performance in an MET course?

Research Context

This phenomenological study used a convergent, parallel mixed-methods approach to explore the student perception and academic performance outcomes resulting from enrollment of students in a college course that incorporated the use of content-specific in-class tutoring support. Quantitative and qualitative data was collected and analyzed to evaluate the use of an in-class tutoring resource within the Mechanical Technology (MET) program at a community college. The research was conducted at a community college located in a mid-size city in upstate New York.

The College enrollment is nearly 12,800 students, with 65% of matriculated students seeking transfer after they graduate. While students' ages range from 17 to 70 years, 89% of the students enrolled are between 18 and 29, with 62% at 21 and under, and 20% at between the ages of 22 and 29. The majority of the students enrolled at the College are seeking degree completion in order to enter the workforce or transfer. However, in 2010, the percentage of students completing a degree within 2 years was reported to be as low as 10.2%. One of the barriers to completion has been the high number of incoming students who arrive underprepared for college-level courses and require developmental courses in order to develop the skills to be successful in credit-bearing courses (Boggs, 2010).

Research Participants

All participants of this study were students who were matriculated in the MET curriculum at the College and had completed one of the two required courses at the College: MET 151 and MET 152. Using a purposeful sampling method, data was collected from four independent research participant groups to conduct the quantitative portion of this study: students enrolled in MET 151 (spring 2014), students enrolled in MET 152 (spring 2014), students enrolled in MET 151 (spring 2015), and students enrolled in MET 152 (spring 2015). Independent sampling is used when one group in a research study has received something additional and the other group has been provided with nothing or a placebo (Huck, 2012). The two groups of students enrolled in spring 2014 did not experience the phenomenon being researched, while the 2015 students had in-class tutoring support as part of their class.

Purposeful sampling was used to select the participants for qualitative portion of the research. All students enrolled during the spring of 2015, who were registered in the course sections where content-specific in-class tutoring support was provided, were invited to participate in the qualitative portion of the research. However, because the purpose was to understand the perceived impact of the academic support strategy on course performance, only students who remained enrolled in the course for the duration of the semester were asked to participate in the qualitative interview.

Instruments Used in Data Collection

Quantitative data. Quantitative data was obtained from the spring 2014 and spring 2015 sections of MET 151 and MET 152 to offer insight on the impact of in-class embedded tutoring support on the final grade outcomes. These grades were retrieved

from archival data and obtained from the institution. Final course grades for all four independent sample groups was requested and included all grades including the unsuccessful grade of *F*. Grade comparison data did not include any identifying student information or demographic student detail. The grades were not connected to any student record, therefore, there was no need for informed consent.

Qualitative interviews. Open-ended, one-on-one, in-depth individual interviews were conducted to obtain qualitative data regarding the students' perceptions of the impact of the in-class tutoring support on their academic performance. Interviews were audio recorded in order to ensure all material was transcribed accurately. All students who completed the identified course sections during spring 2015 were invited to participate in interviews. The target number of participants was 10 students with a balance of five students from each course.

All students enrolled in one of the classes that included an in-class tutoring support were invited to participate via email notification (Appendix A). In addition, the researcher attended MET classes to share information about the study and to recruit participants. All invited participants were informed of the purpose of the study, details for data gathering, and details on participation. The individuals interested in participating were asked to contact the researcher directly to express their interest and to schedule an interview. All participants were required to provide informed consent (Appendix B). The individuals were notified that the data provided in the interviews would be included in the results of a dissertation for the Doctorate in Executive Leadership program at St. John Fisher College, and they were provided with information on their right to be informed of the results of the study. While anonymity was not possible with the face-to-face interview

structure, participants were notified that their identity would be kept confidential and their responses would not be linked to their identity when analyzed or reported.

To compensate the individuals for volunteering their time and to assist with the recruitment of participants, a financial incentive was used in the qualitative research. Participants who completed the individual interview portion of the study were provided a $20 gift card. While the use of incentives can be viewed as controversial, they can promote higher response rates and are often provided in appreciation for the participants' participation and time (Creswell, 2014; Research Ethics Guidebook, n.d.). The gift cards were distributed upon completion of the individual interviews. The participants were informed that participation was the only requirement to obtain the gift card and that they could share both positive and negative perceptions without concern that it might affect their ability to obtain the incentive.

Since the research site is also the researcher's place of employment, it was important to control for bias and/or influence on the participants. While the researcher is not actively involved in the development of the Mechanical Technology program or the course curriculum delivery, it is possible the researcher could have contact with the students through their out-of-classroom experiences. While this interaction would not provide an issue with the quantitative data collection, it could have influenced the qualitative interviews. In order to control for this, the researcher spent particular attention on sharing with the participants that their participation in interviews and comments shared would not be directly linked to them nor would they have an impact on their status as a student.

Data Collection and Analysis

Quantitative data. Quantitative data was obtained and analyzed from both spring 2014 and spring 2015 MET 151 and MET 152 courses using descriptive statistics. Each course with the two independent groups was analyzed to identify and compare grade distribution by frequency and percentages. In addition, the primary focus of this study was the qualitative data from the students regarding their perception of impact rather than solely evaluating final course-grade comparisons. The course-grade data served to confirm or reject (as corroboration or support) the findings obtained from the study's qualitative data analysis.

Qualitative interviews. Semi-structured interviews were conducted in a public setting and were audio recorded over a 2-week period. Interview protocol was set to include information collected about data, time, and location of the interviews, and it included specific questions (Appendix C). Four standard interview questions were asked in an effort to gather data about the students' perception of the impact of the in-class tutoring support:

1. How did you use the in-class tutoring support?

2. Please share how your experience in the course was affected by the presence of the tutoring support.

3. Explain how the presence of the tutoring support affected your participation in the course.

4. Thinking about your interaction with the tutor, how do you feel your grades were affected by the in-class support?

Although the interviews included the above standard questions, follow-up and clarifying questions were asked when appropriate. Informed consent was obtained by all of the participants prior to the interview, and the individuals were assured confidentiality. In order to provide confidentiality within the small sample size, no demographic information was collected. However, the researcher noted basic student profile information that was self-reported during the interview.

Data collected from the semi-structured interviews was transcribed and analyzed to gain a greater understanding of the students' perception of the in-class tutoring on their experience in the classroom and on their academic performance. The interviews allowed for initial analysis to occur during the interview by incorporating clarifying follow-up questions. In addition, the researcher used field notes to document observations during the interviews in order to capture additional information about each subject. The field notes were summarized for each participant and included with each respective interview transcript. Interview transcripts and field notes were reviewed and analyzed within the subject and then across subject through quantitizing and thematic coding.

Quantitized analysis. The process of quantitizing was used to apply a numerical value to the qualitative data in order to provide initial analysis of the qualitative data. Quantitizing was completed by using a priori codes to understand and show participant responses for individual interview questions through numerical graphs (Sandelowski, Voils, & Knafl, 2009). Individual interview transcripts were coded using the a priori codes for each question and the data is provided in Chapter 4.

Thematic analysis. Through first-cycle initial coding, common themes were identified that offered explanations of the students' perception about how the classroom

intervention impacted their learning, their grade, and possibly their retention decisions. Analysis used in phenomenological research focuses on significant statements or themes (Creswell, 2014). Through second-cycle focused coding, major and sub-themes were revealed. These themes are provided and discussed thoroughly via text summary in Chapter 4.

Summary

While tutoring is not a novel concept, providing an in-class tutor to facilitate concept-specific lectures and one-on-one instruction is a new innovation at the College. The results of evaluating the impact of this instructional strategy on course performance, as well as the student perception of the impact, is valuable as the institution aims to improve teacher practice and academic support services to best serve, support, and retain its students. This research aims to provide data that not only supports the use of this strategy but also contributes to the development of a comprehensive program at the institution.

Chapter 4: Results

Introduction

In recent years, community colleges have shifted their focus from enrollment to retention and completion. In response to low retention and completion rates, institutions have implemented specific strategies to target student success. This chapter discusses the findings from a convergent, parallel mixed-methods study conducted to evaluate a specific strategy implemented to address student success. This study explored the impact of the use of a content-specific tutor, who was embedded in college courses, on students' academic performance, which was defined by grade and student perception. The study was conducted at community college located in upstate New York. The study focused on students enrolled in the Mechanical Technology (MET) program at the College.

In the spring 2015 semester, the College developed an initiative using a modified embedded tutoring approach in an effort to support student performance in specific courses within the Mechanical Technology curriculum. The concept was to use embedded content-specific math tutors in the MET course, which requires students to have significant math skills to be successful. Two professional math tutors were employed to attend both the lecture and lab section of the course, in order to offer specific math instruction and one-on-one support for students. The two tutors were each assigned to one course, and they were present for every class lecture and lab. In addition, the tutors were available outside class time for additional assistance.

All participants were students who were matriculated into the MET curriculum and completed one of the two required courses at the College: MET 151 and MET 171. Both courses were taught by the same faculty member. However, there were different tutors for each course. For this research, the tutor for MET 151 is referred to as T1. The tutor assigned to MET 152 is referred to as T2. The role of the tutor was to attend every lecture to remain informed of the course material, as well as to contribute to the course instruction when asked by instructor. The tutors were also expected to attend each scheduled lab session to provide individual and group support to the students as requested. Finally, the tutors were also employed for several hours a week to be available outside the class sessions in order to provide additional one-on-one tutoring.

Quantitative methods summary. Archival data documenting student final course grades was collected from the institution. Using purposeful sampling, the final grades were gathered for all students enrolled in the MET courses that included the in-class tutoring support (spring 2015). In addition, in order to develop a comparison group, final course grades were collected from the same courses in a previous semester (spring 2014) in which no in-class tutoring support was employed. Final course grades were provided via a Microsoft Excel file showing grade distribution by specific class. No identifying student information was provided with the quantitative data, therefore, informed consent forms were not necessary.

Qualitative methods summary. Course enrollment information was collected for the spring 2015 sessions of MET 151 and MET 152, including student email and phone contact information. Out of 75 students eligible, 13 agreed to participate in the study and 10 completed an interview. One volunteer was not able to participate due to an

unexpected schedule conflict, one did not keep the appointment for the interview, and

one was not eligible to participate because he/she was not enrolled in the affected

courses.

Table 4.1

Qualitative Data Analysis Process

Step	Procedure Description
Step 1	Conducted semi-structured one-on-one interviews
Step 2	Asked clarifying questions
Step 3	Summarized researcher observations
Step 4	Transcribed audio recordings
Step 5	Read and reread interview transcripts
Step 6	Listened to audio recordings
Step 7	Compared audio recordings with transcripts for accuracy
Step 8	Completed within line-by-line subject coding
Step 9	Quantitized interview data
Step 10	Conducted coding across subjects
Step 11	Consulted with outside reviewer
Step 12	Identified major categories
Step 13	Completed second cycle across subject coding
Step 14	Analyzed codes and identified themes

Using the analysis process detailed within Table 4.1, data collected from

interviews was transcribed, coded, and analyzed. All audio recordings were transcribed

by an outside consultant. Initial coding was completed by the researcher through a line-

by-line evaluation of the transcripts. In an effort to increase reliability of the transcripts, the researcher listened to the audio recordings to correct discrepancies and to capture data through cues not noted in transcripts (Brinkman & Kvale, 2015). After making minor corrections, the initial coding was reviewed to ensure accuracy, and initial themes were identified. Individual participant responses to the interview questions were quantitized based on a priori codes. The participant responses were grouped by interview question and, through second cycle focused coding, the data was coded across participants. Based on the initial coding, focused coding was used to analyze the response data across the participants in order to identify major themes and sub-themes. An outside reviewer was consulted to review the coding and analysis process and results.

Research Questions

This study sought to answer the following research questions:

1. What impact does implementing a content-specific in-class tutoring support have on academic performance, as defined by course grade, in two courses required in the Mechanical Technology (MET) curriculum at the College?

2. What do community college students, enrolled at the College, perceive as the impact of a content-specific in-class tutoring support on their completion and academic performance in an MET course?

Quantitative Data Analysis and Findings

The comparison data between the research groups, which included the in-class tutoring support (spring 2015 classes), and the control groups, which did not have the tutoring support (spring 2014 classes), are displayed in Figures 4.1 and 4.2. Figure 4.1 shows the MET 151 course comparison. The students in the course with the in-class

tutoring support (spring 2015) received a higher number of grades A, D, and F, when compared to the MET 151 control group (spring 2014). The results also showed a lower number of students within the research group receiving a B and C when compared to the control group. The comparison of the MET 152 research and control groups, shown in Figure 4.2, reveals different results, with the research group showing higher numbers of students with the passing grades of A, B, C, and D and a decline in students receiving an F.
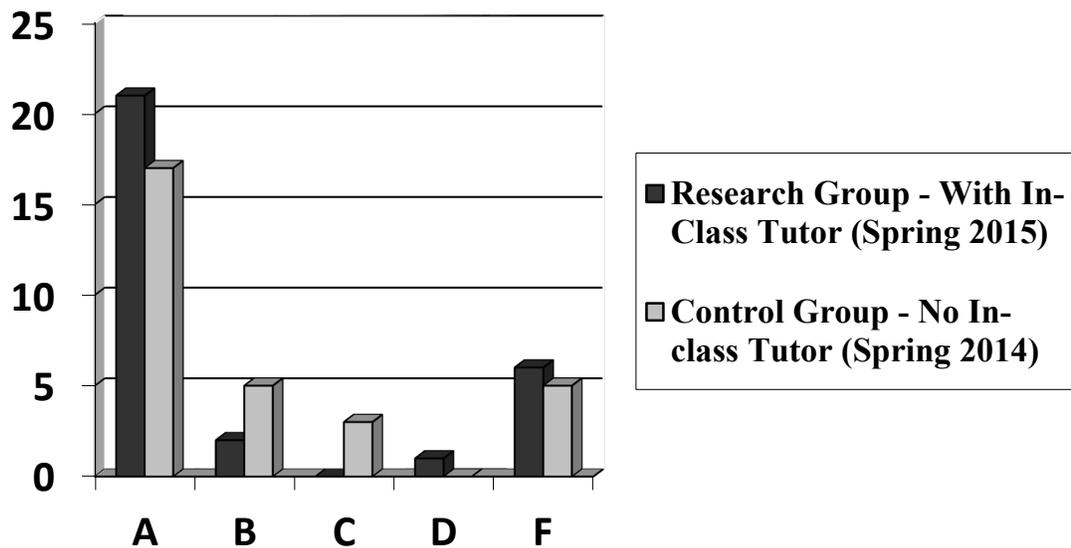

Figure 4.1. Comparison of final course grades with in-class tutoring support (spring 2015) and without in-class tutoring support (spring 2014) for students enrolled in MET 151.
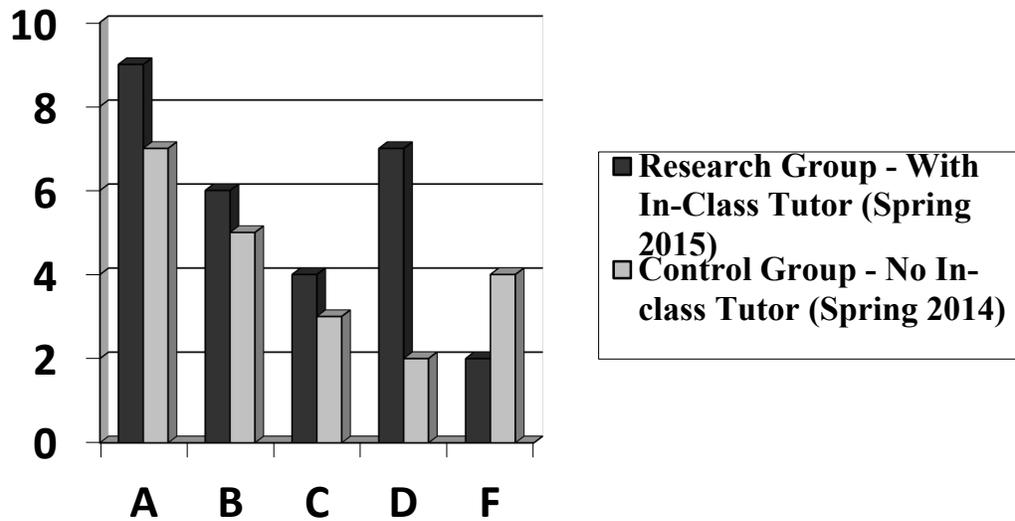
Figure 4.2. Comparison of final course grades with in-class tutoring support (spring 2015) and without in-class tutoring support (spring 2014) for students enrolled in MET 152.

Evaluating the grade distribution by percentage revealed additional detail into the results. Table 4.2 reflects the quantitative data results by percentage per grade by each course. The MET 151 class with the in-class tutoring support showed a higher percentage of grades within the "A" category (70%) when compared to the spring 2014 course (56.67%). Comparing students who earned a B or higher yields a smaller difference with spring 2015 showing 76.67% and spring 2014 resulting in 73.34%. Within the MET 152 course, results showed very similar percentages between spring 2014 and 2015. The greatest difference was between the grades of D and F. In spring 2015, the percentage of students receiving a D (25%) was greater than in spring 2014 (9.52%). Conversely, spring 2014 showed a higher percentage of F (23.81%) when compared to spring 2015 (7.14%).

Table 4.2

Comparison of Grade Distribution Between Courses With Tutor (Spring 2015) and

Without Tutor (Spring 2014)

Final Grade Category	Spring 2015 MET 151	Spring 2014 MET 151	Spring 2015 MET 152	Spring 2014 MET 152
A (A, A-)	70.00%	56.67%	32.14%	33.33%
B (B+, B, B-)	6.67%	16.67%	21.43%	23.81%
C (C+, C, C-)	0.00%	10.0%	14.29%	14.29%
D (D+, D, D-)	3.33%	0.00%	25.00%	9.52%
F	20.00%	16.67%	7.14%	23.81%

Although no direct correlation can be made between the in-class tutoring support and grade distribution, differences in the grade distribution and percentages may suggest students performed better with the support of the tutor. In particular, the increase of students receiving a D and decline in students receiving an F may be reflective of a positive impact of the tutor.

Qualitative Data Analysis and Findings

In-depth, semi-structured interviews were used to address the research question: What do community college students, enrolled at the College, perceive as the impact of a content-specific in-class tutoring support on their completion and academic performance in an MET course? Through one-on-one, face-to-face interviews, data was collected to understand the students' perception of the impact the tutoring support had on their completion and performance in the MET course. Qualitative data were analyzed and findings are described through quantitized data and thematic coding.

Quantitized analysis and findings. In order to provide a quantitative look at the qualitative data, responses to the interview questions were analyzed through the process of quantitizing. Using a priori codes for each question, the data was analyzed through the process of applying numerical values and responses, which are reflected in Figures 4.3 through 4.6.

Figure 4.3 shows the student-reported frequency of the participant meetings with the in-class tutor. While the students' individual usage of the tutor varied among the participants, all participants reported having received services from the tutor who was assigned to their course. Although all of the participants met with the tutor at least once, several participants reported continued use of tutoring support. These meetings may have occurred during in-class lectures or labs, or outside of the scheduled class time.

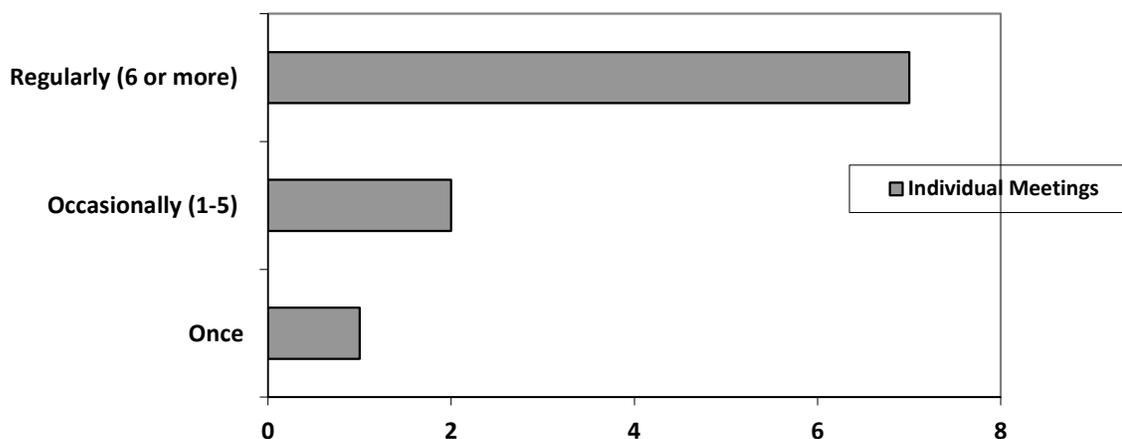*Figure 4.3.* Student-reported individual use of in-class tutoring support.

The interview participants were also asked to report their perception of the impact having an in-class tutor had on their experience (Interview Question #2). "Experience" was left undefined for the students to interpret their own meaning of the term. However, the students were asked to consider their experience in relation to class delivery by the

tutor rather than their own participation or engagement. Student-response data was coded

to provide compiled results that indicated the students' perceptions of the impact the tutor

had was either positive, negative, or had no impact on their experience. The student-

quantitized responses are shown in Figure 4.4. Of the 10 students, eight reported the in-

class tutoring support had a positive impact on their experience in the course.

The participants were asked to indicate the perceived impact of the in-class tutor

on their participation in class (Interview Question #3). In this context, participation was

described as engagement in lecture discussion, questions asked and answered, and

participation in lab activities. In Figure 4.5, the results indicated that no students felt the

in-class tutoring support negatively impacted their participation. Of the 10 students, four

felt the presence of the tutor had a positive impact on their participation, but the majority

of the students felt there was no impact on their classroom participation.
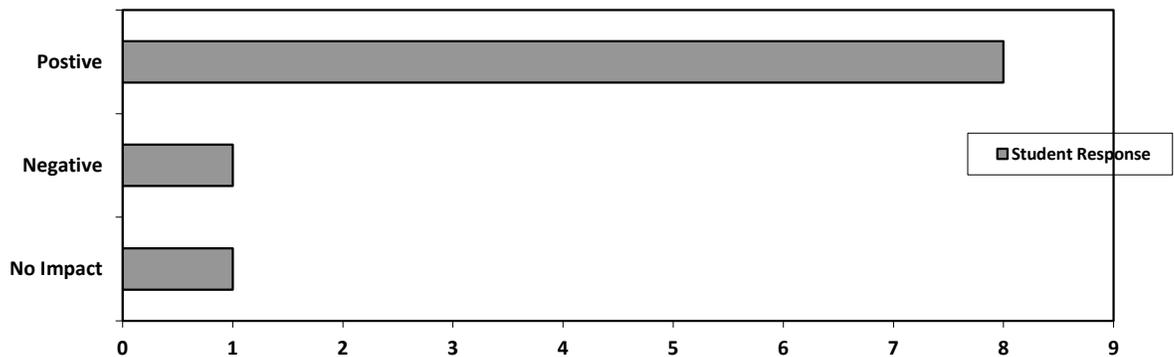
Figure 4.4. Student perception of impact of in-class tutoring support on classroom

experience.
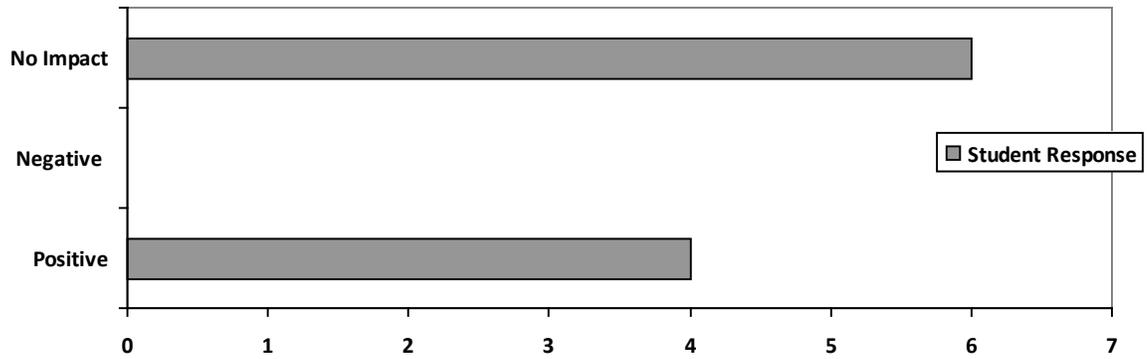
Figure 4.5. Student perception of impact of in-class tutoring support on participation.

The fourth and final interview question asked the participants to report their perception of the impact the in-class tutor had on their academic performance, as defined by grades. Figure 4.6 shows that while two students felt there was no impact of the tutor on their academic performance, one was unsure of the impact, and seven felt the tutor had a positive impact on their academic performance.
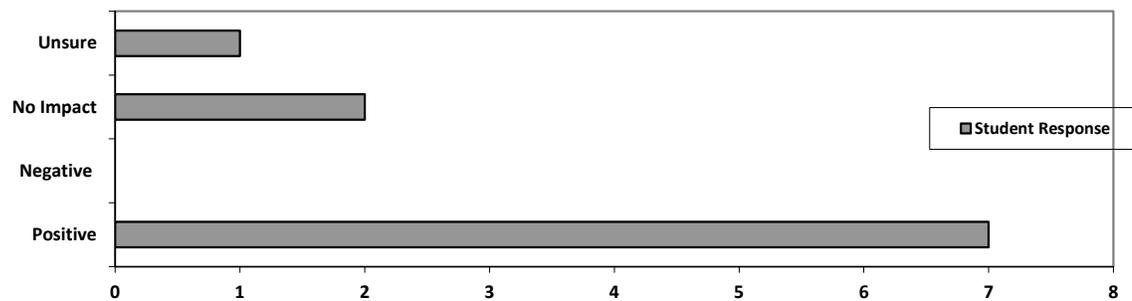
Figure 4.6. Student perception of impact of in-class tutoring support academic on performance.

Thematic coding and analysis. The following section is organized by the four major themes and 11 sub-themes that emerged from the in-depth, within-subject and across-subject analysis of the qualitative data, which was obtained through the one-on-one interviews. The first major theme, *quality of instruction*, incorporates four sub-

66

themes: (a) *theory versus practice,* (b) *alternate instruction*, (c) *student-centered*

learning, and (d) *instructional delivery*. The second category, *access to Support*,

incorporates three themes: (a) *availability of assistance,* (b) *timely support*, and (c)

characteristics of tutor. The third category, *personal barriers*, incorporates two sub-

themes: (a) *student confidence* and (b) *student resilience*, and the fourth and final

category, *academic performance*, incorporates two sub-themes of: (a) *student*

engagement and (b) *student success*. Table 4.3 illustrates a summary of the major themes,

sub-themes, and a description of each.

Table 4.3

Major Theme and Sub-Themes of Student Perception of Impact of In-Class Tutoring

Support

Major Themes	Sub-Themes	Description
Quality of Instruction	(a) Theory Versus Practice (b) Alternate Instruction (c) Student-Centered Learning (d) Instructional Delivery	(a) Specific Math Support (b) Second Opinion (c) Individualized Support (d) Timing/Setting
Access to Support	(a) Availability of Assistance (b) Timely Support (c) Characteristics of Tutor	(a) Additional Resource (b) Immediate Assistance (c) Personality & Approach
Personal Barriers	(a) Student Confidence (b) Student Persistence	(a) Reducing Fear (b) Increasing Resilience
Academic Performance	(a) Student Engagement (b) Student Success	(a) Class Participation (b) Knowledge/Grade

Quality of instruction. The main theme of *quality of instruction* emerged both within and across subjects during the analysis of interview data. Overall, the responses of the participants reflected the perception that having the in-class math tutoring support had an impact on the level and quality of instruction they received in the course within each of the sub-themes. The sub-themes identified within this category include (a) *theory versus practice,* (b) *alternate instruction*, (c) *student-centered learning*, and (d) *instructional delivery.*

Theory versus practice. This marriage between theory and practice is critical to performing well in the course, with curriculum, and ultimately in one's career. While the practical expertise is necessary to perform the machinery, the knowledge of the mathematical concepts is required to ensure accurate measurements when configuring the machinery and producing a machine tool. As a result of this relationship, the courses within the MET curriculum have a strong foundation in math. Participant 2 described the heavy influence of math concepts in this simple statement: "It was all about the triangles, and it was just math, math, math, math." However, not all of the students entering the program had the math knowledge necessary to properly compute the formulas that needed to be applied when running the machines. Participant 3, a non-traditionally aged student who was returning to school after many years, shared feeling underprepared with math skills, "Main thing that I came away from it was that, yes, I did need to take some serious math review because it was a lot more work than it should have been." Participant 9 revealed that "I kind of, I struggled in some parts, like the math; all the math he [the instructor] gave us, which is kind of still new, so I took advantage of it, and I was with him [T2] every day."

The participants responded frequently on the impact of having an in-class math tutor in relation to the intersection of theory versus practice. Participant 1 reported a positive impact of the tutor on connecting theory to practice:

> He [T1] knew a lot about stuff, and he knew how to do it. So it was not just having him there, to help you, the trade, or whatever you were doing, he could actually help you do stuff [math].

Participant 3 stated a similar perspective: "He [T2] was able to tie all the, um, examples into terms and examples you see in and around the shop . . . this was all strictly from the view of application . . . ." Supporting the same idea, Participant 5 reported, "We were given, like, specific equations and stuff to set up for the machine, and he [T2] would give us help with what we needed to have the equations and how to actually perform the equations." Participant 3 added additional thoughts on the value of having a tutor with the ability to connect math theory to practical application:

> I think that came from the fact that he [T1] was more of a true math background rather than an MET background. It helped fill in some of the, "Ok you're doing this operation, this is how you would calculate this."

Two participants felt the math focus of the tutor created a conflict with the practical application. Participant 2, an individual with over 30 years of professional experience in the industry, stated:

> I saw the few who were repeating the process of sitting at the surface plate in the lab getting tutored math help from him [T2] were the ones who were least able to complete the physical lab project by the end of the semester. They're down to the

last week, now he [T2] is not there, and they're cramming trying to do, a novice, what would take a novice two weeks to try and do in a day.

Participant 6 also felt the math focus of the tutor may have reduced the potential benefit for students:

It's great to hear a theory behind it, but you'd rather go to the instructor who's been in the industry . . . he [the instructor] could show you the theory and then could also give you a lesson on it, on how to work it.

Alternate instruction. The participants reported that the presence of the in-class tutor created an opportunity for instruction to be provided from multiple perspectives and through different instructional modes. The participants reported that the in-class tutor was able to provide an additional approach when teaching math-specific content. Participant 5 described the value of this alternate instruction with the following: "I think it helped a lot because it was a second opinion, cause that's how I learn." Participant 5 also added:

Like, the first way is just from the instructor, and the second [T2] is a totally different point of view, because I used to look at YouTube videos on how to do math, and it was just he [T2] helps . . . there was second views on everything.

Participant 5 also stated:

He [T2] was like an outside view on the class, so there was a different perspective on the class. It was like a second way to do something; it made it easier because there was another way to do it besides the way the instructor taught it.

Similarly, Participant 7 discussed the impact of having an additional perspective:

Well, definitely having two people in the class really helped, because if the instructor said one thing and then he [T2] said another on how to do a math

problem, he [the instructor] would say one way, and he [T2] would say another, and you could pick between which one you want to do.

Participant 4 described the benefit of multiple approaches:

I would say, in some situations, like the way the instructor would explain something, [T2] would have a different way of approaching it, which that helps to see it from a couple different points of view . . . they would talk to each other regarding, like, the problems and the approach to them. So that, I would say, was useful in a way.

Participant 8 shared his perspective that having an in-class tutor offered another instructional approach that directly impacted his grade, "The tutor or the professor will help you in getting a better grade, because they're going to show you different ways to do the problem, and that's going to help you get a better grade on the test."

Participant 10 stated:

The tutoring outside and inside does help. I would have dropped the class if I didn't have someone to sit there and say, "Okay; you know, they showed you this way, but I find it to be easier this way" and sometimes it's just that different, you know, the different style of learning that some other professor or some other tutor brings to you that helps you get through the hard parts.

While these participants reported the value of the alternate instruction, one participant explained that the impact of this additional instruction created a challenge:

I was more confused after [T2] was done; it was bad enough with the instructor, but at least the instructor writes nice and straight and large and it's legible, and

then you have a whole other take from another person's point of view, and it got

rather confusing from my point of view.

Student-centered learning. In addition to multiple modes of instruction, another

theme that emerged from the participants was their perception that the instruction

provided by the in-class tutor was more focused and responsive to their needs. One

participant explained the need for more student-centered learning:

They never really went through what it needed, and then, you know, there's kids

in class there that maybe they didn't know they would like to see a breakdown of

how it worked, and if he got a couple kids yelling out the right answer, he'd [the

instructor] just move on to the next example.

The participants revealed several instances in which the tutor was able to provide

more in-depth and individualized instruction. Participant 7 explained the role of the tutor

by providing this student-centered approach:

Well, the first three quarters of the year, the instructor has us doing these budget

math problems, and a lot of people didn't get it, so we all went through [T2]. He

helped us, he broke it down even better than the instructor did, and he did one on

one for each other, one-on-one time with him, he made you understand and

wouldn't let you leave until you understood.

Participant 3 also compared the tailored instruction of the tutor to the experience of the

instructor's lecture: "In many cases, when we did have direct math-related things in the

instruction, he [T1] was generally leading those, and the other instructor was, kinda, like

you know, gloss over the top type thing."

Participant 1 shared a similar perspective:

The teacher sometimes, kind of, gives you a less vague explanation sometimes

than the, like, a tutor, he [T1] would really kind of go in depth, and really try and

help me more rather than just kind of be, like, okay, well, this is what you got to

do, like figure it out.

Another participant (3) clarified the ability of the tutor to provide an in-depth approach,

"But [with] everything else going on, the regular instructor couldn't, um, give as much

focus on that. [T2] had more time for, ah, dealing with the specific math formulas." In

addition, the participant added, "He [T2] was much better at, you know, stepwise detail

type thing."

When asked to describe what the tutor's help looked like, Participant 3

emphasized the ability of the tutor to offer unique support based on student need:

Um, a lot of it was trying to, trying to catch, okay, what are some of the shortcuts

to remember or the, um, oh what's the word for that . . . mnemonics or little

memory phrases . . . like acronyms and stuff like that. That are easier to

remember, but then when you say it through, it decodes to something meaningful,

because a lot of that just raw memorization of anything isn't one of my stronger

points.

Another key part of the student-centered learning was the ability of the tutor to

individualize assistance. The in-class tutor was available to provide individualized help

within the lectures and labs and, also, outside of the regular class time. All of the

participants received individualized assistance from the tutor. However, managing that

individualized support created challenges for the tutor in serving all of the students.

Participant 10 described this individualized support:

He'd [T2] go from one person to another, to another, to another; so while you're

sitting there trying to figure it out if you got stuck, you know, it was just, ah, now

you're waiting for him to go from that person to that person to come back to you

to help you figure out where you got stuck or what was the issue when you got

stuck.

Participant 10 went on to explain that while this created a challenge, he still found value

in using the support to supplement the course instruction:

When you get in a group, a lot of people have questions and what happens is

when they all come, there's one person there, other people will be like, well I'll

just go . . . you know, one person might come here and . . . like, okay, I have him,

he can help me do everything I need and then I'm gone, but then no one else gets

help . . . I think it's beneficial if you have something quick, but not if you're

going to use it as a study hall, and I think that's what most of the other kids,

sometimes myself, would do. Like I don't get it, like I need you to walk me

through it just step by step.

Instructional delivery. The participant responses revealed a sub-theme regarding

the impact of incorporating the in-class tutoring support on the instructional delivery of

the course. While not directly related to the research question, this finding offers insight

into the indirect influence the structure and format the tutor support had on the quality of

instruction for the students. The tutor was present for both the lecture and lab sessions of

the course. Being present in the lecture allowed the tutor to be aware of the specific

content of the course and to better serve the students. Participant 7 described this in his

response, "He [T2] was just in there to kind of get the understanding, familiarizing,

because he didn't know the material, but he knew how to do it. He was just familiarizing himself with it." Participant 4 explained the benefit of having a tutor to understand the content:

> so in the classroom, it wasn't necessarily like one-on-one time with [T2], or whatever, but afterwards, I mean, it helps that the tutor is familiar with what we actually did in class rather than just throwing a problem at them, because even though they know their stuff, if you're not like familiar with it, you can forget it.

While the participants understood the value of having the tutor present in the class, the structure of the support in the lab seemed to fail in meeting all of the students' needs. Some students felt the tutoring support offered in the lab conflicted with their ability to stay on task with the lab assignment. Participant 10 explained, "I would go meet [T2] after class and then go to lab. I didn't use [T2] a lot in the classroom and in the lab because you're doing other things." Participant 9 shared a similar perspective:

> but in the lab, the only thing I really didn't like was it was in our machine tools lab like at the end [of the room]. So it kind of interfered with, like, our stuff that I was doing, but I was farther ahead, so it didn't bother me at all.

Participant 3 also acknowledged that this structure wasn't ideal but explained how some students may have benefited from the tutor being present in the lab:

> Although a number of the people were, in turn, using him, a fair number who would use him when they didn't have time to get on a machine to do something instead to go over some of the other homework and that type of stuff.

Participant 2 felt very strongly about the delivery of this support, stating:

What I found most disturbing was he would come down to the lab to tutor. During

a lab, you're only given, let's see, you had lab once a week, so once a week you

had 3 hours to try and complete a project through the course of the semester, and

unless you know how to make things, the project is complex enough where you're

going to scrap it over and over and over again before you get it right. To have the

tutor try to go around and get people to sit down and do math instead of what

you're at the lab for, I found very frustrating.

Participant 2 went on to provide a description of the setting:

As far as [T2] was concerned I wouldn't even talk to him because it's shop time;

you're there, you only have a small window to get your work done, and the math

tutor is great, it's needed, but that's the wrong place; it shouldn't be in the, you

can't hear him for one thing, cause the shop is noisy. You've got six lathes, you

have a dozen bridge ports, you've got the furnace running for heat, you've got this

going and that going. He [T2] talks with a very soft voice, he needs to be in an

enclosed room so that, and in this big open shop with 40-foot-high ceilings and all

the echo, he's talking, you can't hear him . . . . So I'm trying to sit and listen to

him and going like this. and I'm still not able to hear or concentrate because of all

the noise and the constant activity, there just isn't any place in the shop to get

away from all the chaos going around. So you have all this visual and audio

stimulus when you're trying to focus on what's on that piece of paper.

Access to support. The theme of access to support was another major finding that

resulted from both within and across subject analysis of the interview data. This theme

encompasses the participant responses that related to the impact the in-class tutoring

support had on the students' ability to access resources. The themes identified within this category include (a) *availability of assistance,* (b) *timely support*, and (c) *characteristics of tutor*.

Availability of assistance. The participants communicated the high demand for instructor support within the researched MET courses. Participant 6 explained, "I think it's a good thing having [a tutor], you got one teacher and, you know, 25, 26 kids." Participant 1 emphasized the challenge created in getting support because of this demand, "You got 25 people in there, they can only, you know what I mean, meet with so many people."

Given this demand for assistance, students reported that time with the instructor was limited. The participants continually commented on the benefit of having another resource, considering the issue of unmet demands. Participant 3 simply stated, "He [T1] was additional support during the lab portions to be able to help answer and clarify things." Participant 9 stated briefly, "He [T2] was additional help." Participant 8 specifically discussed the benefit of having the tutor when considering the availability of the instructor

> If you have one professor, you know, like, everybody want to ask him questions, he's now going to have everybody on it; but if you have two people in the class, you can always go to the next person, if the other person is busy, so it really helped me a lot to be honest with you.

Participant 9 also reported his preference to seek support from the tutor rather than the professor, who might have been unable to provide the time, "So, for me personally, I use the tutor when I need help with all this stuff instead of me going to the professor; while

he's busy doing other stuff, I will go to the tutor." Participant 7 also reported his use of the additional support as a result of limited time with the instructor:

He's a very busy guy, and it's very, very hard to get hold of him. He's not always around . . . [he] is always doing something else or talking about random stuff, so we'd ask [T2], and he'd definitely help us with it.

Participant 8 shared a similar point of view,

Well, when he was in the class, because they didn't have so many students in the class, you can ask the professor so many times, so having a tutor in the class, we can always go to him when the instructor is busy, so we can always go to [T2] and ask him for help . . . most of the lab, we need Trig. to figure out something, and so we only have one professor in the lab, so everybody can't go to the professor, some people have to go to [T2].

Participant 7 described the practical benefit of this additional support by simply stating, "But definitely having two people really helped in the class because, if we were doing work, two people can have a question."

This theme of increased access to support was consistent in the participants' experience within both the lecture and the lab sections of the course. Participant 4 described the perception of increased support this way, "So, during the lab, you could definitely get a lot of access to him [T1]." Participant 1 recounted the value of the additional resource specifically in the lab:

I felt that it was nicer having an extra person in the lab to be able to ask questions . . . cuz in that lab, there's a lot of kids and not a lot of machines sometimes, and sometimes you're waiting, and if you could go on to a different operation of

something that you're doing, having that extra person to be able to help you . . . so

it was just easier to have another person there I guess.

Participant 1 went on to report how the presence of the additional support also impacted

the overall experience of the course, "I just felt it went smoother, and I don't know. It

definitely had something to do with having [another] person there."

Timely support. The ability to receive assistance when the student needed it was

another key theme revealed through the participants' responses. The participants

described the role of the tutor in the classroom and lab, explaining the presence of this

support when needed. Participant 5 explained the setting of the classroom:

He'd [T2] be sitting at one of our tables, and I'd go over to him and ask him

cause, most of the time, it was just the equation, cause I'm going to have a chance

actually just dialing numbers and hitting the specific points.

Another description of the setting and tutor availability was provided by Participant 7:

In the lab, when you, if you needed him, if you were done with whatever you had

to do and you asked him, he would help you with your homework, any

homework, any math homework you had to do or anything math related he would

help you.

The participants related the impact of this immediate support to their ability to

keep on task and continue their work without delay. The ability to troubleshoot while

trying to complete a project was described by Participant 1:

It made it easier to do my work and to get questions answered, and to get, you

know, keep it going rather than. I just hate hurry up and wait, and that's what it

seems like now it is. It just, it helped me to keep going more, rather than, alright,

I'm waiting, you know, I'm waiting, which is annoying.

Supporting this theme, Participant 10 described the value of having this immediate

assistance in order to eliminate any delay in progress:

It was just that you did have some help available right then when you needed it, it

wasn't okay, like, let me wait to go home and YouTube it or Google it to find out,

and then I can fix it and come back and see if I'm right when I ask him tomorrow

or the day after.

Participant 8 also explained the benefit of having access to a support person who could

help with immediate problem solving, "So if you want to, like, figure out everything on

your own, it will take you more time to figure out things that are going to someone that

already know the material they're showing you how to do it." Even when immediate

support was not appropriate, Participant 8 acknowledged the resource was still timely:

Well, if you really needed help, like, he really need help, you can figure it out.

You can call [T2], he can come over; we didn't do that most often because we

don't want to disturb the class, so most of the time for me, I'll wait until the class

is over, then I can go to [T2], or sometimes [T2] will always come before class

starts, then I can ask [T2] any questions before the professor comes in.

Participant 9 explained a similar experience and described that, although it could have

been better, the presence of the tutor offered timely support:

I mean, it probably would have been better, like, to meet before class; I would

have been a little bit more prepared, but, like, meeting with him afterwards, going

over the stuff that we did or the stuff that's due tomorrow.

However, not all students took advantage of the ability to have immediate support within class time. Participant 10 shared his awareness of the access to the resource but explained his hesitation of taking advantage of the resource when needed:

It takes away because, you know, you're supposed to be doing something else, even though you're trying to get something figured out, to go to him and stop to ask him a question when you're trying to stay on line with a task.

Characteristics of tutor. The participants shared feedback regarding specific qualities of the tutor and how they were impacted by those characteristics. While the responses were mixed, this sub-theme reveals that the personality, approach, or communication style of the tutor can affect the impact the support offers a student.

Although the tutors were well received, Participant 10 described how the tutor's approach can have an impact on the effectiveness of the support. "He knows his stuff, I don't necessarily think he can, sometimes there's a, he's a little fast, sometimes he's a little fast, and I'm not the fastest person picking up stuff, but it might be me." Participant 2 spoke more directly about the personal characteristics that created barriers, "I talked with him once or twice, a little bit of a language barrier, just that he has a very heavy accent." Participant 6 explained his perspective:

It seemed like when [T1] was there, he really didn't, as much as I knew, he really didn't help, it was more just kind of hung out, he was kind of one of the kids . . . . He just seemed very flustered, he didn't seem like a teacher. He seemed like one of the kids helping us.

Alternately, Participant 1 provided a response demonstrating how the tutor's characteristics positively impacted the effectiveness for him,

I liked him quite a bit and, you know, we ended up, um, I don't know how to explain it, ended up having good rapport with each other. You know what I mean. I just think it worked out well.

Personal barriers. Personal factors can impact on a student's ability to be successful. A key factor that can affect performance is student anxiety. Helping students manage these personal barriers can assist them in achieving academic success (Lobo, 2012). This category emerged from the participant responses, and two themes were revealed as areas that were impacted by the presence of an in-class tutoring support strategy in the associated course: _student confidence_ and _student persistence._

Student confidence. The theme of student confidence or self-confidence emerged from comments made by the participants that outlined the impact of the tutor on their fear, intimidation, and embarrassment. Participant 6 described how some peers hesitated to ask questions because of these factors:

The ones that didn't understand it, cause you can, I'm not saying that you can, point him out and you can tell, but it's like you have the same kids answering the same questions, because they might know that level of math or whatever they're doing, and then there's a couple of kids that are just kind of, like, I don't understand it, and they're embarrassed to, I don't know, they seem like they might be embarrassed, I don't understand this. Then, like I said, if [T1] has to sit there and work it out, you get the kid to sit in the back and say, oh I already know this why are we doing this . . ."

Through their comments, other participants explained how they believed assistance from the tutor helped their confidence. Participant 3 revealed how working with the tutor

helped to reduce stress, " It got me a little bit more comfortable with some of the math as we were hitting it." He went on to explain how the support not only eased stress but helped to build confidence:

> What I saw from other people is a lot of people in the program, let's just say when they went through high school, math wasn't their strongest point, and the fact that, yes, the curriculum correctly needs to do a certain amount of math stuff, and [T1] was trying to get them over the hump, that it's not that big, it's not that scary.

Participant 10 explained how students may lack confidence when seeking help during the instructor's lesson and how the in-class tutoring can help address the need:

> When you're sitting in class, you want to ask the question, but you know that you didn't get it from the first section that she put or the first section that he put on the board, you were kind of getting it, but then you went on, and then you said, okay I really don't get it, so let me ask this question, and then we'll have to go way back, and then sometimes you just don't want other people in the class to see and snicker and have their little side conversations, because when you have those learning difficulties, it makes it seem like they could be talking about anything, baseball, football, but it makes it seem like they're talking about you, and you don't get it. So, you know, you sit there and be quiet, and then you try to find somebody after and that's where the tutoring comes in.

When asked to clarify how tutoring specifically helped, Participant 3 replied, "If you have a bit more confidence in something, it tends to mean you are going to interact with others, you're going to have that type of a general positive attitude."

This theme of self-confidence also connected to the concern expressed by the participants about the potential judgment of the instructor or peers. Participant 3 explained his perception of himself and others "[Students] would ask themselves 'what will the instructor think of you?' People who may have not asked, then remain silent." He continued by explaining how having the in-class tutor as a resource provided a judgement-free environment for the students to ask questions. He described, "They [T1/T2] are not in the judging category, because they don't have an impact on the grade. People will ask without hesitancy, [they can] go ask him without impact on performance." Participant 10 recounted, "It's the space where you don't feel that you're being judged by other individuals and that someone is there to actually try to help you get over the difficulties you're having."

Student persistence. Another theme that emerged from participant responses related to student resilience. The participants reported feeling frustrated, overwhelmed, and at times, a desire to quit. The responses indicated that having the in-class tutoring support helped some students to persist. Participant 1 recalled, "It definitely made it easier . . . . I could see in some peoples' faces, they just wanted to quit." Participant 5 indicated, "He [T2] wasn't making it hard, he wasn't making it, like, so I couldn't do it. He was actually helping, which was beneficial. I definitely enjoyed it. It was very helpful." Participant 1 shared additional detail regarding the environment of the evening lab and his perception of other students struggling:

It is a night class. If I don't get an answer to my question, I'm just going to go home and go to bed. I see some people get frustrated, and they do leave. Like, if they can't get help. And I can just see it in their face. Like they just want to ask

somebody for help, but some people aren't. I'm more forward, like I'll go up to the teacher and be like, I need help, like, you need to come help me. And some people are more just like, uh, you know they'll ask them once, but if they don't come back to them, then they are just like, 'Man, I'm not, you know, I'm sick of this,' and then [they] leave.

Participant 10 shared his experience:

You're home and you're trying to do it, but you do it by yourself, you get so aggravated that you say, "Okay I'm struggling and I don't want to do it anymore because all it's doing is aggravating me." Then when you're aggravated [that] it doesn't help when you're struggling with some work. So when you can go see the tutor and he kind of says "Okay, it's not that bad, you just did this part wrong," you know, it gives you some sense of, "Okay I can do it, it's just that I got to concentrate on this part or that part," and they're here to help us if I get stuck, you know?

Academic performance. The category of academic performance most directly related to the research question. The students' perception of the impact of in-class tutoring support on their performance in the course revealed two themes, *student engagement* and *student success*.

Student engagement. Students that are more actively engaged in a class, tend to perform at a higher level. At the same time, the level of knowledge has an impact on student participation and engagement. Participant 10 described this lack of engagement, "If you didn't know, you just didn't know; you sat there and you were quiet." Another participant (9) explained, "People that know the answer is [are] going to spit it out. So, I

felt I wasn't too sure, you know, but if I knew what I was doing, then I can spit it out."

Participant 5 commented, "It definitely helped and made me more involved because I could understand it better from his, just him giving the direction on how to do the equations." Participant 8 summarized:

> You're always willing to participate in things that you know about, so going to
> [T2] and helping me, knowing the materials, I'll be willing to participate in class,
> but if I don't know the materials, I'll only try to keep quiet and not show people I
> don't know the material.

Even a participant (4) who reported less frequent usage of the in-class tutoring support acknowledged the impact that receiving support from the tutor could have on participation in class:

> I know there's other people in the class that struggle and stuff like I do and on the
> weeks when they do hook up with the tutor, they can answer a lot more questions
> in class. So, from that angle, I'd say that they benefited, and I know I would have
> benefited more, because I do pretty much every time I go to a tutor, so like I said,
> I just kind of dropped the ball last semester.

Student success. The theme of student success is defined broadly as the student's perception of accomplishment and successful academic performance within the course. This theme was not only revealed when participants were asked to reflect on the impact of the in-class tutoring support on their academic performance but also when the students reflected on their experience with the tutor. Overall, the participants felt the inclusion of the tutor in the class lecture and lab had a positive impact on their academic performance. When asked about the potential impact on grades, Participant 3 replied, "It was positive,"

and "He definitely helped me." Participant 1 responded, "Just having a tutor, just based on that, definitely helped." The positive impact was shared by Participant 5: "Overall, I think it helped a lot." Even the individuals who did not use the tutoring resource regularly reported a positive impact of the support on academic performance with Participant 4 stating, "It definitely benefited some people." Even Participant 2, who did not see value in the tutoring support personally, stated the perceived impact on academic performance, "Some [other students] of them must have [benefited] because they actually passed the class. There were students that I know who went to [T1] or [T2] and without their help, they would not have passed."

Some participants went into detail specifically about how they connected the presence of the tutor and the impact on academic performance. Participant 10 explained the perception that the support helped to keep students on task:

The people that really need help and have struggled, it [tutoring support] helps them. It helps them stay on task, it helps them not get behind, because the worst thing is to be trying to play catch up all the time . . . there is someone there that you can go talk to and they can help you figure out exactly where you're making your mistakes.

Participant 9 explained how the tutor helped to better prepare him for the math requirements within the course:

The instructor gave us a lot of trig homework . . . it definitely helped on the math part; on the other stuff, I felt confident, like the machine tool stuff, other than the math problems. Yeah the math, he definitely helped with the math stuff.

Participant 7 detailed how the assistance from the tutor had an immediate impact on the grade earned, and that it helped with test preparation and performance:

We had tests, and that really helped when it came to the math problems that we did in there. [T2] helped me, it definitely helped, because some of those questions that he helped me with were the same exact problems that the instructor put on tests. So I knew how to do them. They were really easy because [T2] showed me how to do it.

The participants perceived there was a connection that existed between the use of the tutor and their academic performance. One participant stated that the tutoring was the reason for his passing of the course, "I would have dropped out of classes, or I wouldn't have passed class without that one-on-one instruction." Interestingly, even those participants that did not feel the need for tutoring reported a positive impact of receiving support on academic success.

Summary of Results

The purpose of this mixed-methods study was to assess the impact of the inclusion of in-class tutoring support on student academic performance in two college courses within the Mechanical Technology curriculum as measured by the students' course grades and their perception. Both quantitative and qualitative data were used to address the research questions.

Quantitative data comparing frequency of grade distribution between classes with the in-class support and the same course without the support strategy determined the impact of the in-class tutoring support on student grades. Grade data were also reflected

through percentages to offer a more insightful look at the comparison between the courses.

The students' perception on the impact of the tutor on academic performance was evaluated through qualitative data in two ways. Quantitized results were used to show a summarized snapshot of student responses. Student perception was then discussed within four major categories and 11 themes. The first category, Quality of Instruction, incorporated four themes: (a) theory versus practice, (b) alternate instruction, (c) student-centered learning, and (d) instructional delivery. The second category, Access to Support, incorporated three themes: (a) availability of assistance, (b) timely support, and (c) characteristics of tutor. The third category, Personal Barriers, incorporated two sub-themes: (a) student confidence and (b) student resilience. The fourth and final category, Academic Performance, incorporated two themes: (a) student engagement and (b) student success. Chapter 5 provides a deeper evaluation of the findings as they relate to the practical implications and recommendations for future research. In addition, the limitations affecting this study are discussed.

Chapter 5: Discussion

Introduction

　　While the primary mission of community colleges is to provide open access, an equally important part of their mission is to support students toward the achievement of their goals (Hulbert, 2014). Despite these efforts, the majority of students enrolling in community colleges are not successfully completing their programs and earning degrees (Siekpe & Barksdale, 2013). Community colleges are thus being called to action and urged to address the low completion rates. In recent years, increased effort has been spent to understand ways to improve the effectiveness of community colleges through new student success initiatives (Schneider & Yin, 2011). Without the improvement of student support, institutions will not maintain the enrollment needed to continue to deliver on their mission and remain viable (Catt, 1998).

　　This chapter provides an overview of the research problem as well as a summary of the findings in relation to the research questions. The limitations of the study are also discussed along with recommendations for further research and the implications for practice within higher education, specifically community colleges.

Implications of Findings

　　This phenomenological study used a convergent, parallel mixed-methods approach to understand the impact on student academic performance with inclusion of in-class tutoring support in two Mechanical Technology courses as measured by course

grade and student perceptions. The findings were derived from both quantitative

comparison and qualitative data obtained from structured one-on-one interviews.

Grade distribution comparison. The impact of the in-class tutoring support on

student grades was evaluated through quantitative data by comparing frequency of grade

distribution between classes with the in-class support and the same course without the

support strategy. The results of the quantitative data show only slight differences between

the grade distributions of the classes with the in-class tutoring support when compared to

the classes without the in-class support. However, when comparing the two MET 152

courses, a higher percentage of students received a D grade, while fewer received an F

grade. This might suggest that the in-class tutoring support was helpful to the students

who might have failed the course without the additional assistance. In addition, in the

comparison of the MET 151 classes, there was a 12.33% increase in students receiving an

A grade, and a 10% decrease of students receiving a B grade in the course with support,

compared to the course without the support. These results suggest that students might

have benefited from the in-class tutoring support, resulting in the increase of grade levels.

Quantitized student responses. Quantitized analysis of the qualitative inquiry

indicated that 100% of the students used the services of the tutor at least once, with 6 out

of 10 students reporting using the tutoring support six or more times during the semester.

The majority of the students reported feeling the in-class tutoring support had a positive

impact on their experience in the classroom. Of the students, 70% reported that the in-

class tutor had a positive impact on their grades. These quantitized results indicate that

the students' basic perception was that the in-class tutor had a positive impact on their

classroom experience, participation, and academic performance.

Major themes and sub-themes. The findings from the qualitative analysis provided deeper insight into the students' perception of the impact the tutor had on academic performance. Through additional qualitative analysis, four major themes emerged and contributed to the findings: quality of instruction, access to support, personal barriers, and academic performance. These major themes were detailed further through the exploration of 11 sub-themes.

Quality of instruction. The theme of quality of instruction included four sub-theme: theory versus practice, alternate instruction, student-centered learning, and instructional delivery. The findings indicate that the students felt the instruction provided in the course was enhanced by the presence of the in-class tutor. The students reported that the addition of the math-focused instruction was a compliment to the practical application in the course lab. The students also reported the increased value of having an individual with specific math knowledge to complement the instruction within the class lecture. This finding supports the theoretical principle that assistance from a more knowledgeable person makes it easier for learners to develop skills that are beyond the individual's current abilities (McLeod, 2010).

Students benefited from the second instructional approach that was demonstrated by the tutor. Based on the theoretical foundations of andragogy, the findings support the idea that students benefited from a more interactive process, facilitated by the in-class tutor, rather than by traditional instruction (Werth & Werth, 2011). The presence of the math-trained tutor provided alternate approaches to the delivery of the course material. This additional instruction created options for students to use mathematical formulas and approaches that worked better for their learning style. In addition, the opportunity for a

tutor to tailor the lesson to the specific student's need offered an environment that was more conductive to adult learning (Knowles, 1977). The findings indicate that the students appreciated the individualized focus of the tutor, and they benefited from instruction that was tailored to their needs. Tutors typically use their skills to assess the knowledge of the student and use that information to determine what information to review and how fast to progress to a new topic (VanLehn, 2011). Specifically, this process used the concept of the zone of proximal development and scaffolding to create an individualized approach to move a student's understanding to a new level.

While the students appreciated having the tutor as an element in the classroom, in the lab, and outside of the class, they provided valuable practical feedback regarding the setting of the tutoring within the lab. The students felt a quieter and less chaotic setting would have improved the effectiveness of the tutor. The feedback about the setting indicated that not all of the students' needs were considered when planning the delivery of the tutoring support. In addition to the setting, some individuals reported having trouble balancing time between completing the lab project and getting tutoring support.

Access to support. The concept of access to support emerged as a major theme, incorporating three sub-themes: availability of assistance, timely support, and characteristics of tutor. Jenkins (2015) stated that it is important for institutions to make the process for accessing resources clear and easy in order to help students succeed. The presence of the tutor in every class from the start of the semester made access to the academic support simple for the students. Also, having the tutor in both the lecture and lab created the opportunity for support multiple times a week.

A key finding within this theme was that the students felt the tutor was able to serve as a support when the professor could not help of the all students who needed support. While maximizing the time a student interacts with the instructor helps to improve student success and retention, the findings suggest that was not possible in these courses (Jenkins, 2015). The students reported the perception that the professor of the course was too busy to address all of the students' requests for support because of the high demand for assistance. The findings indicate that the in-class tutoring provided additional support at the same level as the professor. The students reported feeling supported by having another person available in the class and lab. In fact, at times, the students preferred the help of the tutor over the professor.

Crosling et al. (2009) stated that providing a learning environment that offers the opportunity for immediate feedback, regarding student performance and addresses the students' needs when they are identified, helps support student success. The participants in the study focused on the importance of having this timely support. Having the tutor readily available allowed the students with quick access when they needed to troubleshoot during a project in the lab. Tutors often allow a student to work through a problem by trial and error, offering time for the student to resolve mistakes as a method of learning. However, the tutor intervenes once the student is stuck and lacks the ability to move forward (VanLehn, 2011). This support from the tutor allowed the students were able to obtain support right when they needed it and keep on track with their coursework.

While not a focus of the study, an indirect finding revealed that the characteristics of the tutor may have had an impact on the effectiveness of the support. The feedback regarding tutor personality, approach, education, and professional experience was

provided by the participants. The response to these characteristics was mixed, with some providing positive feedback and others giving negative feedback, indicating that personal characteristics might have an impact on tutor effectiveness.

Personal barriers. Increased knowledge about the personal characteristics that might affect a student's ability to be successful can help to address those barriers (Burns, 2010). The theme of personal barriers incorporated the sub-themes of student confidence and student resilience. Research conducted by Lobo (2012) suggested that learning anxiety is a key factor that impacts student persistence. The participants in this study indicated that the in-class tutoring support helped to reduce their anxiety associated with the class, particularly the math focus of the course. In addition, some of the respondents explained that working with the tutor helped to build their confidence in the course material. Along with this benefit, students also expressed feeling more comfortable approaching the tutor with questions because there was lower risk of judgment by the professor or classmates. This might have also contributed to a reduction in anxiety when the students needed support. The combination of reduction of anxiety and increase of confidence might have contributed to greater student persistence. In fact, this in-class tutoring resource was so important to some students that they indicated they would have dropped the course without that resource.

Academic performance. The findings indicate that the students believed there was a positive impact on course engagement and academic performance as a result of the in-class tutoring support. The theme of academic performance included the sub-themes student engagement and student success.

Based on Vygotsky's (1978) zone of proximal development construct, students will learn better when they are engaged in the instructional process (Dixon-Krauss, 1996). Some students felt that their participation was positively impacted by the tutor. These students reported feeling better informed and able to participate in the classroom conversation as a result of working on the course material with the tutor. While there was value to having the tutor in the lab, the students felt more engaged because they were better prepared for the class discussion. However, this finding was not consistent among all students. The students who already felt engaged in the discussion felt the presence of the tutor made no difference in their class participation.

The development of mastery of key concepts creates the foundation for success in a course and can have a strong impact on retention (Crosling et al., 2009). The heart of the findings is the student perception of the impact of the tutoring support on their academic performance. Of the students interviewed, 7 out of 10 felt the in-class tutoring strategy had a positive impact on their course grade. One was unsure of the impact, and the two students who did not feel the tutoring helped their grade did not use the tutor regularly. While the level of impact varied among the students, the specific ways in which the students reported being impacted were related to math understanding, test preparation, and additional one-on-one instruction. When reviewing the qualitative data in light of these quantitative findings, it is important to consider that students could perceive that the tutoring helped their academic performance, even though their grade was low. For example, the qualitative analysis suggests there may have been a positive impact on the students shifting final grades from an F to a D in MET 152 or a B to an A in MET 151.

Even more significant were the findings that directly connected to student

persistence and retention. Some students felt that without the tutoring support, they would

have failed or would have withdrawn from the course. Even one of the two students who

did not use the tutor reported the value of the support regarding student success and

academic performance, "Some [other students] of them must have [benefited] because

they actually passed the class. There were students that I know who went to [T1] or [T2]

and without their help, they would not have passed."

Limitations

There were several limitations of this study. These limitations were related to (a)

qualitative sample, (b) variance in tutor support, (c) research timing, (d) specific program

focus, and (e) methodology.

Qualitative sample. Of the males who were enrolled in the Mechanical

Technology program, 10 registered for the course that offered an in-class tutor. The small

sample size, as well as the lack of gender diversity, limits the generalizability of this

study. In addition, all of the participants at the publishing time of this research were still

enrolled at the College. Obtaining data from students who were no longer enrolled in the

courses might have yielded a different perspective. This sample of subjects was also

limited because only students who passed the MET course were invited to participate in

the interviews, which might have skewed the results on the students' perception of the

impact of the tutor on their success in the course.

Tutor variability and characteristics. While the study has consistency within the

course comparison between semesters, there were different tutors assigned to MET 151

and MET 152. Although both tutors were trained through the same process, the tutors'

personality, approach, education, and professional experience are variables that could not be controlled in this study. In addition, both tutors were male. It is possible that a female tutor might have prompted different responses from the participants.

Research timing. The qualitative research was conducted during the fall semester. Given that the in-class tutoring support was provided during the spring semester, it is possible that the participants did not recall their experience in the course accurately. Conducting research immediately after a course is completed may have offered additional insight.

Specific program focus. This in-class tutoring strategy was used only in the Mechanical Technology program within two courses. The delivery of these courses might be in line with other career and technology courses, but they may not be generalizable to other curricula.

Methodology. This study was conducted with a mixed-methods approach. However, the quantitative data was obtained without student identification or demographic information. Therefore, the course grade data provided could not be connected to individual students with the qualitative data collected through the interviews. It is possible that connecting the qualitative and quantitative data might have provided a more in-depth understanding of the impact on student grade. If the researcher knew, for example, which students who were interviewed received higher final grades versus lower final grades, as well as which of those student reported they were positively versus negatively impacted by the in-class tutoring support, the study might have yielded more in-depth findings among the variables.

Recommendations

     Future research. This research paves the way for many more opportunities for additional research that can assist community colleges as they address student success and retention issues. While this study demonstrated the value of examining graded comparison and student perception, independently, other findings could offer deeper understanding by connecting the qualitative research with the quantitative data. Understanding how an individual student performed in a class might have provided a richer analysis of the qualitative interview data. Additionally, interviews with the tutor and course instructor might have provided a valuable perspective. Including the perspective of the two roles would have given a more comprehensive look at the strategy being researched.

     This study provided insight into students' perceptions in a curriculum that is predominantly enrolled by males. Additional research should focus on a more diverse group in order to provide more comprehensive insight and to increase generalizability. In addition, there would be value in research conducted in other courses and academic programs.

     While quantitative data showed no significant differences in grade distribution between courses with the in-class tutoring support and classes without in-class tutoring support, the qualitative responses of the students indicated that most felt the tutor had a positive impact on their grade. A future research topic could look deeper into the potential benefits of the students having a positive perception of academic support, even if the grades earned do not show a direct positive impact.

An important element of the in-class support strategy was the easy and immediate connection of students with the academic resource. All of the students enrolled in the course and lab were connected to a tutoring resource in the first lecture. Some participants reported that they used the support because it was there; others reported that they would not have gone to the tutoring center to seek out support. Given these specific responses, a recommendation for research would be to investigate if the students are enrolled in the courses with the tutor utilize the on-campus tutoring center at a greater frequency than students who did not have the tutoring support.

Professional practice and policy. The findings of this study offer valuable insight for practitioners and institutional leadership. In addition to the need for further research, recommendations for practice and policy focused at an institutional level are:

Improvements to in-class tutor strategy. The findings of this study provide immediate recommendations for improvement of the in-class tutoring support strategy. The unexpected findings related to instructional delivery and tutor characteristics provide valuable feedback regarding the unmet student needs. Through student responses, it was revealed that the setting, timing, and format of the tutoring did not work for all students. Specifically, some students reported special circumstances that interfered with the structure of delivery. For example, one student reported difficulties with hearing in the loud setting due to hearing loss. Another student reported difficulty focusing in a setting that had many distractions. Specific student needs should be considered, and additional space should be made available to offer a quieter setting when necessary.

The findings also indicate that the characteristics of the tutor had an impact on the level to which students sought support. While personal characteristics are unable to be

controlled, the professional and educational background of the tutors should be considered when hiring and developing training. Research indicates that successful tutoring programs not only involve careful selection, including faculty recommendations, but a strong training program (Maxwell, 1990). In addition, continuous feedback should be obtained from the students in order to ensure that all students have the chance to benefit from the tutoring support.

   Expand the efforts. Incremental improvements will not make a large impact on overall performance results. In order to see an impact on retention rates, initiatives must be brought to scale institution wide (Jenkins, 2015). The findings reveal that 100% of the students connected with a tutor. In addition, the findings indicate that 8 of the 10 students reported they continued to use the support. While we are unable to determine the direct connection of the use of the support with the final course grade earned, the fact that all of the students were connected with the academic resource is a clear, positive result. Research indicates that students who receive tutoring, particularly students identified as underprepared, remain in college longer than those who do not use tutoring services (Maxwell, 1990). As a result of the open access mission of community colleges, these institutions are more likely to enroll students lacking appropriate academic preparation (Mertes & Hoover, 2014). One recommendation would be to expand the effort beyond the MET curriculum and to target other courses with math foundational concepts that have high rates of failure and withdrawal.

   It is understood that when support services are optional or not easy to access, students often do not reach out to utilize these supports. In addition, students who are low income or first generation may not be as likely to access tutoring resources (Dadgar,

Nodine, Bracco, & Venezia, 2014). Another recommendation would be to explore ways to expand this effort to reduce the need for students to seek out support.

Value of both theory and practice. An important finding from this study is that the student responses revealed the enrichment of the learning experience based on the combination of instructional approaches. The participants commented strongly on the value of the alternate approach to instruction and explained that these multiple instructional strategies addressed the differences in learning styles. In addition, having instruction from both the practical and theoretical framework provided a richer educational experience. When hiring faculty, it is important to consider both their professional practical experience and their educational background. Their teaching experience should also be a factor when selecting faculty. If this is not possible, the incorporation of an expert in theory or practice should be brought in to the class to supplement the instruction as needed.

Funding considerations. It is widely understood that the retention of an enrolled student has greater financial benefit than the recruitment of a new student (Dempsey, 2009). The findings of this study suggest that while students felt the support was beneficial, the impact may not have shown in the course grades. However, the student responses also indicate the support was the primary reason for remaining enrolled in the course and for the continued use of the campus tutoring support. Given the mixed results of this study, funding should be considered to determine the feasibility of continuing this in-class tutoring support. The students reported that their decision to maintain enrollment in the course was because of the in-class tutoring support, indicating that this support strategy has a direct impact on student retention. Funding considerations must include the

evaluation of the financial benefits of student retention in connection to potential costs associated with a support strategy.

Conclusion

Community colleges are a key component of the higher education system in the United States with over 10 million students enrolled each year (Jenkins, 2015). Over 46% of students enrolling in college are doing so at community colleges (AACC, 2015). While these statistics show that community colleges continue to meet their mission of open access, data regarding student completion rates creates the need for a new focus. With average completion rates at approximately 30%, community colleges should pay attention to improving student success and completion (Burns, 2010).

Aside from the impact on a student's ability for upward mobility as a result of earning a degree, student attrition has serious financial impact on students, families, and the economy (Crosling et al., 2009). State and national governments contribute significant amounts to institutions and student grants that has been failing to translate into degree-bearing citizens (Schneider & Yin, 2011). Given the personal, societal, and economic impact, it is important for community colleges to focus on improving student success and completion.

Demsey (2009) stated that these low completions rates may be connected to low retention due to student attrition. Rather than one primary reason, it is widely understood that a variety of factors influence student retention and degree completion. However, having an understanding of the various factors influencing student retention helps provide institutions with valuable insight to implement or modify programs, services, and policies to best support student success (Siekpe & Barksdale, 2013).

In order to address the retention and completion issue, community colleges should understand what factors influence these completion rates. A review of the literature was provided to develop a framework of understanding on the research related to community college success, retention, and completion. In addition, the body of literature and research evaluated the student and institutional factors affecting college student retention. The reviewed literature underlines the importance of colleges to develop new and creative ways to provide instruction and academic support strategies that can contribute to academic success. Providing an environment that engages students in the learning process and helps to develop core competencies can help reduce student attrition (Crosling et al., 2009). In addition, improvements to teaching practice, teacher methodology, and classroom practice can have a positive impact on student success and retention (Crosling et al.). As a result of this knowledge, efforts to improve student completion, and awareness of institutional factors that impact that completion, has prompted a variety of successful student programs and initiatives to be developed (Smith, Baldwin, & Schmidt, 2015).

The purpose of this study was to investigate the effectiveness of an in-class tutoring strategy that was implemented in order to positively impact student academic performance. Through a convergent, parallel mixed-methods approach, this phenomenological study evaluated the impact of the in-class tutoring support on the students' grades, as well as the student perception of that impact. Quantitative data was used to compare final grade distribution of students enrolled in courses with the in-class tutoring support and the same two courses offered without the in-class support strategy. Qualitative interviews were used to understand the students' perception of the impact

enrollment in a course with an in-class tutoring support had on their academic

performance in the course. The study findings address the following research questions:

1. What impact does implementing a content-specific in-class tutoring support
   have on academic performance, as defined by course grade, in two courses
   required in the Mechanical Technology (MET) curriculum at the College?

2. What do community college students, enrolled at the College, perceive as the
   impact of a content-specific in-class tutoring support on their completion and
   academic performance in an MET course?

The impact of the in-class tutoring on student grades was evaluated through

quantitative data, comparing frequency of grade distribution between classes with the in-

class support and the same course without the support strategy. Student perception of the

impact of the in-class tutoring support on academic performance was investigated

through qualitative, one-on-one in-depth interviews.

Within and across the subject analysis of the qualitative data yielded four

overarching themes related to the impact of the in-class tutoring: (a) quality of

instruction, (b) access to support, (c) personal barriers, and (d) academic performance.

These themes were further analyzed and organized into 11 sub-themes themes, revealing

the participants' perceptions related to the in-class tutoring support and how it impacted

their academic experience, participation, and overall performance.

The theme of quality of instruction emerged based on the participants' responses,

indicating that the in-class math tutor had an impact on the level of instruction they

received in the course. The first major theme, quality of instruction, incorporated four

sub-themes: (a) theory versus practice, (b) alternate instruction, (c) student-centered

learning, and (d) instructional delivery. The students indicated that the presence of the

tutor helped to improve the level of instruction they received in the course. This

improvement was due to a compliment of the practical instruction with the addition of the

mathematical foundation provided by the tutor. Second, the tutor provided an alternate

instructional approach that addressed different student learning styles by providing

multiple methods for solving problems. Third, the ability to have the tutor provide

individualized attention helped to meet students at their level and provide them with an

opportunity to build upon their specific knowledge base. Finally, the students provided

additional feedback, indicating the challenges of the classroom environment for receiving

tutoring and how that tutor might have been more effective in another setting.

The major theme of access to support encompassed participant responses that

related to the impact the in-class tutoring support had on the students' ability to access

support resources. The sub-themes identified within this category include: (a) availability

of assistance, (b) timely support, and (c) characteristics of tutor. Every participant

reported accessing the support, with most using the tutoring services regularly. The tutor

provided an additional resource to meet the reported high demand for help given the fact

that the professor was not always available. Having the tutor included in the class and lab

also provided the opportunity for immediate support, which the students reported as

critical to continuing with the course project. While not directly related to the research

question, the students indicated that the personal, educational, and professional

characteristics of the tutor might have had an impact on their effectiveness.

The third major theme, personal barriers, revealed the impact the in-class tutoring

support had on individual barriers described by the participants. The participants'

responses revealed the perception that the tutoring support helped to reduce personal barriers. This theme emerged from the participant responses and incorporated two sub-themes: (a) student confidence and (b) student persistence. The students reported that working with the tutor helped to build their confidence when confronted with the heavy math concentration of the course. In addition, the support offered a place to rely on when the students were feeling overwhelmed or anxious. Knowing the resource was there to help and not judge student performance, helped to encourage students to continue in the course.

The fourth and final major theme, academic performance, emerged based on participant responses that described their perception of the impact of the in-class tutoring on their performance in class and on their grades. This theme incorporated two sub-themes: (a) student engagement and (b) student success. While feedback regarding engagement and student participation was mixed, students who received regular tutoring felt better prepared to participate in class discussions. The students who already felt engaged in the course did not feel the tutoring support changed their level of engagement. The students were more consistent with their response regarding the impact on student success. Of the students interviewed 7 out of 10 reported that they believed the tutoring support positively impacted their academic performance, specifically their grade. Some students went further and attributed their completion of the course to the presence of the tutor, stating that they would have failed or dropped the course without the in-class tutoring support.

The study was limited by several factors. The qualitative sample comprised 10 male students within the Mechanical Technology curriculum. The small sample lacked

gender diversity and variety in academic program. Added to this limitation is the fact that the qualitative interview only included students who had successfully completed the course. The timing of the study, one semester following the course with the in-class tutoring support, might have affected the qualitative responses of students. Also, the methodology used did not connect quantitative data (course grade) with qualitative data (interview responses).

The findings of the study provide insight into the effectiveness of the in-class support strategy from the students' perspective. However, the quantitative results do not show a clear, direct impact as a result of the incorporation of the tutoring support. These results lead directly to recommendations for future research. Additional research could go a step further by connecting the course grade with the qualitative data to provide a richer picture of the students' experience. In addition, future research with a more diverse sample, both in gender and curriculum, is recommended. Additional recommendations for research include tracking the students to understand future use of tutoring support.

Given the mixed findings, recommendations for practice and policy are focused at an institutional level. Immediate improvements to the in-class tutoring support should be implemented based on the feedback regarding setting and delivery of the support. In addition, a wider implementation of the tutoring strategy may show a greater impact on grade and retention. Based on the findings, another recommendation is to consider the strengths of the faculty when hiring. Ideally, ensure that both the theoretical framework is also provided with the practical application within the instruction of course content. Finally, an evaluation of this support strategy should be conducted with regard to financial sustainability. This would provide an understanding of the value of each

individual student retained as a result of this tutoring strategy and compare that against the cost of attrition.

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Data Collection Tool Outline

LETTER OF INTRODUCTION TO THE PARTICIPANTS – INTERVIEW

Dear Student:

I am a doctoral student at St. John Fisher College (SJFC) in Rochester, New York. As part of my doctoral research, I am conducting a study to determine how you think the in-class tutoring provided in your Mechanical Technology (MET) course influenced your academic performance. I want to hear what you think - your ideas and opinions are important.

In this study, you will be asked to participate in a fact to face audio recorded interview. Participation in this interview should take 30 minutes or less. There are no risks to you from your participation in this study. Your name and responses in the interview will be confidential. Your responses will not be connected to your name when recorded or reported. In return for your time and participation in the study, you will receive a $20.00 gift card.

Your participation in this study is totally voluntary and you may withdraw at any time without negative consequences. If you wish to withdraw at any time during the study, simply stop participating in the interview.

Please feel free to contact me, Cathleen Dotterer ███████████, if you would like to discuss anything about this study. The Institutional Review Board (IRB) of St. John Fisher College has reviewed and approved this research proposal. For any concerns regarding confidentiality, please call Jill Rathbun ██████████. She will direct your call to a member of the IRB at St. John Fisher College.

Thank you for your willingness to help with this research! Your ideas are valuable and will help to provide feedback regarding the use of tutors in the classroom.

I appreciate your willingness to participate!

Cathy

Cathleen J. Dotterer
Doctoral Student and Researcher
St. John Fisher College
Doctorate in Executive Leadership

Appendix B

Approved Consent Form

INFORMED CONSENT FORM – INTERVIEW

St. John Fisher College

Title of study:	Assessing the Impact and Student Perceptions of Content-Specific In Class Tutoring Support
Name of researcher:	Cathleen Dotterer (315) 491-7251, Ed.D Candidate, SJFC
Faculty Supervisor:	C. Michael Robinson, Ed. D (crobinson@sjfc.edu)
Purpose of study:	To determine how content specific in class tutoring support impacted student success and experience in the registered course
Place of study:	Onondaga Community College
Length of participation:	The interview will take thirty minutes to participate.
Risks and benefits:	There are no risks to you from your participation in this interview.
Method for protecting confidentiality/privacy:	You participation and responses will be confidential and there will be no identifying information collected. All materials, included audio recordings will remain under lock and key by the researcher. All digital information will be stored on a password protected drive. Individual responses may be shared with researcher's dissertation committee and advisor during the analysis process. In cases where individual data is presented, a pseudonym will be assigned.

Your rights: As a research participant, you have the right to:

1. Have the purpose of the study, and the expected risks and benefits fully explained to you before you choose to participate.
2. Withdraw from participation at any time without penalty.
3. Refuse to answer a particular question without penalty.
4. Be informed of appropriate alternative procedures or courses of treatment, if any, that might be advantageous to you.
5. Be informed of the results of the study.

If you experience emotional or physical discomfort due to participation in this study, please contact the researcher, Cathleen Dotterer at (315) 491-7251 for appropriate referrals.

The Institutional Review Board (IRB) of St. John Fisher College has reviewed this project. For any concerns regarding confidentiality, please call Jill Rathbun 585-385-8012. She will direct your call to a member of the IRB at St. John Fisher College.

☐ Click here to indicate that you have read and understood the study described above and have access to a copy of this form.

☐ Click here to indicate that you are 18 years of age or older.

☐ Click here to indicate that you agree to participate in the study as outlined above.

Date Saturday, August 22, 2015

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Data Collection Tool Outline

COPIES OF DATA COLLECTION TOOLS – INTERVIEW

<u>Interview Protocol</u>
For each interview, the following information will be documented:

Date: _____   **Time: _____**

Location: _____   **Consent Sign Formed? _____**

The interview will include the following general instructions:

Thank you for agreeing to participate in this interview. The discussion will last thirty minutes. I know your time is valuable; your thoughts are important and will be used to help to improve in class support here at ▮▮▮▮▮ *Your responses will remain confidential.*

For the following questions, please share your thoughts and experiences.

       Question 1: How did you use the in class tutoring support?
       Question 2: Please share how your experience in the course was affected by the presence of the tutor.
       Question 3: Explain how the presence of the tutor affected your participation in the course.
       Question 4: Thinking about your interaction with the tutor, do you feel your grades were affected by the in class support?

To encourage interaction, the facilitator will have the option to ask following up questions which are directly related to the research questions.