A COMPARATIVE ANALYSIS OF STUDENT ENGAGEMENT BETWEEN COMMUNITY COLLEGE STUDENTS

by

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Liberty University

A Dissertation Proposal Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

For years, community college research has focused on student engagement in an effort to improve student academic performance, retention, and graduation completion rates. While the positive effects of student engagement at both the community college and 4-year university levels have been consistently supported by previous research, there has been very limited research that has focused exclusively on the impact of student engagement in the growing subset of Workforce, now referred to as Career and Technical Education students. Since 2003, community colleges have employed the Community College Student Report to gather data from students on several variables positively correlated with increased student engagement levels. The purpose of this causal-comparative study is to compare student engagement levels between Academic and Career and Technical Education students enrolled in a college district in Texas as reported on the Community College Student Report which covers five major benchmark areas. If a difference existed, the original contention that Career and Technical Education students' inputs would differ could indicate the need for more focused attention on this group in the normal administration of the survey. The original expectation was that there would be statistically significant differences in responses between groups; however, the results indicated unremarkable differences in student engagement levels between the two groups in all five benchmark areas and reflected only slight differences in any of the subscales.

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LIST OF ABBREVIATIONS

BEAMS: Building Engagement and Attainment for Minority Students Survey

BCSSE: Beginning College Survey of Student Engagement

CATE: Career and Technical Education

CCFSSE: Community College Faculty Survey of Student Engagement

CCSSE: Community College Survey of Student Engagement

CCSR: Community College Student record

CSEQ: College Student Experiences Questionnaire

GPA: Grade Point Average

HSSEE: High School Survey of Student Engagement

LSSSE: Law School Survey of Student Engagement

NCES: National Center for Education Statistics

NSSE: National Survey of Student Engagement

SE: Student Effort

SEL: Student Engagement Level

SENSE: Survey of Entering Student Engagement

SfL: Support for Learners

THECB: Texas Higher Education Coordinating Board

VocTech: Vocational/Technical

Chapter One: Introduction

Student engagement is the amount and extent to which a student is involved with the school or campus in and out of the classroom. Broadly defined throughout the literature, student engagement is the, "extent to which students are actively involved in meaningful educational experiences and activities" (Marti, 2009, p. 1). The body of research supporting the positive effects of student engagement on student success at all levels of education is extensive and consistent (Pascarella & Terenzini, 2005; Marti, 2009; Pace, 1984; Astin, 1984; Chickering & Gamson, 1987). Since 2001, student engagement "has become an increasingly prominent part of the vocabulary of community college discussions about effective educational practice and student success" (McClenney, 2011, p. 1).

The focus and attention given to increasing the level of student engagement on college campuses across the nation are rooted in data-based decision making. From studies dating back over 60 years, data supports a positive correlation between student engagement and such college success indicators as student attrition (Chapin, 2008), retention (King, 2003), academic performance and graduation rates (Bragg & Ruud, 2007; DeBerard, Spielman, & Julka, 2004; Hyers & Zimmerman, 2001; Prohaska, Morrill, Atiles & Perez, 2000). The conclusions drawn from most of these studies are that higher levels of student engagement equate to higher academic performance, lower attrition and higher retention rates (Kuh, 2001a), all of which are major objectives and concerns for community colleges, thus the interest in student engagement levels.

The more engaged a student is in the college education process, the better the result for all concerned. Collectively and individually, practically every aspect of the community college experience could benefit from a more engaged student (Kazmi,

2010). Teaching methods and styles, academic program offerings and student services, budgets and operational costs, administrative policies and procedures, to name a few, can all be altered or enhanced in order to increase student engagement levels. For these reasons, student engagement levels and the numerous variables associated with them are scrutinized continuously in an effort to promote student success.

Student surveys designed to measure how engaged a student is in the processes proven to increase success may fail to adequately represent certain subpopulations in the sampling. Because of this, while community colleges seek to gather this critical information from all student sectors, they may not be gaining the level of representation most indicative of particular student subpopulations. This may be the case with the Career and Technical Education students as they are generally nontraditional students attending evening classes on a part-time basis. The stratified random sampling the Community College Survey of Student Engagement (CCSSE) uses to identify participating classes each term reduces the opportunity for the Career and Technical Education (CATE) student to participate as it is heavily geared towards the traditional students' schedule of day-time and academic courses. It is vitally important for all segments of community college students to have adequate representation in the data these surveys produce as these are used to design programs and implement changes to increase student engagement levels in all students.

A part of the problem is that the survey is traditionally conducted with a higher number of traditional, fulltime college students, not those enrolled in the technical or workforce programs who are primarily non-traditional and part-time students. For example, at one of the five colleges in the Alameda Community College District, the Texas Higher Education Coordinating Board reported a total of 13,064 students for the

2008-2009 school years. Of those, just under half, 6,103 or 47% of the total population, were CATE/Workforce Education students. When reviewing the CCSSE data for the same college during the same school year, students were identified by grade levels (matched by course numbers) and academic or technical majors, and less than 11% of the participants that year were CATE students (CCSSE, 2009). After this data was compared with the nationwide participating numbers, CATE technical and workforce students comprised less than 25% of the total CCSSE results for that college (THECB, 2009).

By not including the input from nearly a quarter of the available participants, the CCSSE results could be missing a critical link and its results could fail to represent this portion of the student population. Without an intentional focus on the CATE students, their inclusion in these studies is nowhere near their representative numbers in the community college population at large and thus their input could be drastically understated and their needs not met.

Another fact decreases the likelihood for CATE students to participate in these surveys. CATE students are concentrated in the evening courses and are generally part-time students, two characteristics that lessen their chances for being selected to participate in these surveys. While they are less likely to participate in the surveys, their numbers are increasing in the overall community college population (as high as 65% at some colleges) and projected to continue to increase in future years (Witt, Wattenbarger, Gollattscheck, & Suppiger, 1994).

Based on community colleges' utilization of this data, and the CATE students' potential not to be included in these surveys, the resulting problem, more specifically then, is that recommendations made by CCSSE- participating colleges designed to improve student engagement for all students could be missing CATE students' input, a

growing subpopulation and a critical element on community college campuses today. When CCSSE results are published and colleges invest state and federal dollars to make improvements in those areas identified by the data as the ones needing improvement, the nontraditional workforce or career and technical education students' requirements may not have been included proportional to their representation in the greater student body. As a result, community colleges could expend thousands of dollars without the visibility of needs that exist, but were not expressed through the survey process by a large percentage of their students.

Even more important than this, as Christian educators, we could fail to meet the needs of all of our students and the opportunities to skillfully assist them in their education. If their needs differ and they require a level of instruction and administration that Christian educators are not made aware of, then it is practically impossible to effectively educate this sub-population.

Background

This study will look at the complex processes occurring between three components of the community college experience, the Career and Technical Education Student, the Academic student, and the community college decision makers. To accomplish this more effectively, it will include a snapshot of today's community college campus, its unique student body and its academic and technical education programming, all of which stem from its rich legacy and history. It will also focus more specifically on one sub population from the community college environment, the Career and Technical Education (CATE) student. Characteristics of this sub population will be defined and analyzed in conjunction with the numerical data extracted from the CCSSE making it critical to understand the broad amount of variety present in this population and some of

the current and projected trends related to this population. This information will provide a more thorough background upon which the data will be analyzed and conclusions will be drawn.

This study will explore a variety of components related to the major focus of this study, CATE and Academic community college students and their levels of student engagement. Details will be provided regarding student engagement in general and its specific history and use among community colleges and other levels of education as well. The background will provide relevant details regarding each of these three areas.

Problem Statement

The study will address the following problem: Current student engagement results may not contain adequate input from the sub-population of Career and Technical Education (CATE) students. As a consequence, it remains unknown whether current student engagement survey results adequately include and represent their needs for increasing student engagement levels particularly in five benchmark areas: Active and Collaborative Learning, Academic Challenge, Student-Faculty Interaction, Support for Learners and Student Effort. Because the normal administration of the CCSSE does not isolate results between the CATE and Academic students, any existing significant differences in survey results between Academic and CATE students may not be visible, or included in the results. There is not enough data available to make an adequate comparison between student engagement levels for these two groups of students.

Purpose Statement

The purpose of this research project is to determine whether there is a difference in survey results from the Community College Survey of Student Engagement (CCSSE) collected from the subpopulation of CATE students in all five benchmark areas when

compared to CCSSE data collected from Academic majors as evident in their responses to student engagement survey questions. It could provide community college decision makers with data-based results that could change the way they evaluate and use CCSSE data. The data could also assist them in the development of survey implementation processes that ensure total inclusion in future CCSSE administrations.

Significance of the Study

This study is significant because it will focus on a large sub-population on community college campuses today and will provide detailed data on their needs, a focus that is absent from most community college studies. It will make a significant contribution to the body of research on nontraditional students, highlighting student needs and their self-reported efforts with student success and utilization of services, rarely documented in the literature.

This study is also significant because community colleges expend literally thousands of dollars and other resources each year with the goal of improving student engagement, in addition to the increasing operational costs for today's community colleges. With the rising cost of higher education, currently a $375 billion dollar industry (Bleumnstyk, 2008; Bushong, 2009), and long-standing, sluggish national and local economies, community colleges must exercise caution in all expenditures. If the results from this study can assist community college planners to more accurately gear student improvement efforts toward their total student population, it will make a significant contribution to this field.

In direct relationship to its previously-stated significance, the results could reduce operational costs and allow community colleges to allocate those funds more effectively. By helping community colleges grasp the variety of demands on program and operational

costs and focus on areas identified by their student populations as requiring additional upgrades and changes, the results could assist them in the allocation of limited funds dedicated to improve student engagement levels for all community college students.

This study will add to the existing body of research regarding student engagement, but will also specifically focus on the 2-year technical and career education student. This focus makes it unique in that most research encompasses the 2-year student without such segregation. This study will fill that gap in the literature and introduce concepts worthy of further study within this population.

From a Christian perspective, this study recognizes the basic Christian principles of inclusion of all and the importance of the individual to the collective success of all. The CATE students are significant and their contributions and inputs should be visible to those making decisions especially if these decisions are being made in the best interest of students as a whole. A fair approach would result in equal consideration of every student's needs. As Christian educators, by including and making more visible this population's needs, they will be in a better position to service them holistically.

Research Questions

The study will answer the following research questions:

1. Is there a significant difference in the Community College Survey of Student Engagement data which measures the overall student engagement levels between Career and Technical Education and Academic students in the benchmark area of Active and Collaborative Learning as indicated by their responses to 22 Community College Survey of Student Engagement survey questions?

2. Is there a significant difference in the Community College Survey of Student Engagement data which measures the overall student engagement levels between Career

and Technical Education and Academic students in the benchmark area of Student-Faculty Interaction as indicated by their responses to 15 Community College Survey of Student Engagement survey questions?

3. Is there a significant difference in the Community College Survey of Student Engagement data which measures student engagement levels between Career and Technical Education and Academic students in the benchmark area of Academic Challenge as indicated by their responses to 15 Community College Survey of Student Engagement survey questions?

4. Is there a significant difference in student engagement levels between Career and Technical Education and Academic students specifically regarding their college's Support for Learners as indicated by their responses to 29 Community College Survey of Student Engagement survey questions?

5. Is there a significant difference between Career and Technical Education and Academic students in their responses regarding levels of Student Effort as indicated by their responses to 30 Community College Survey of Student Engagement survey questions?

Research Hypotheses in the Null Form

For the purpose of this study, community college students in the participating district are divided into Career and Technical Education (CATE) students and Academic students. CATE students (formerly known as Workforce students) are those who major in areas such as Logistics, Truck Driving, Turf Grass and Golf Management, Veterinary Technology, Business Management, Information Management, and Administrative Computer Technology. Academic students are those who major in areas more traditional areas such as History, English, Math, Economics, Engineering, Biology or Chemistry, or

Psychology. While these two groups are generally aligned with nontraditional (CATE) and traditional student (Academic) definitions, there are exceptions in both groups. This study will focus on the two groups defined as CATE and Academic with the students' major alone determining their group identity.

The null-hypotheses for the research questions are as follows:

$HO_{1.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Active and Collaborative Learning as indicated by their responses to 22 Community College Survey of Student Engagement survey questions.

$HO_{2.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Student-Faculty Interaction as indicated by their responses to 15 Community College Survey of Student Engagement survey questions.

$HO_{3.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Academic Challenge as indicated by their responses to 15 Community College Survey of Student Engagement survey questions.

$HO_{4.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Support for Learners as indicated by their responses to 29 Community College Survey of

Student Engagement questions measuring specific areas of learning and the learning experience.

HO_5. There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Student Effort as indicated by their responses to 30 Community College Survey of Student Engagement questions measuring specific areas of student behaviors and academic effort.

Identification of Variables

For this study, the unit of analysis is the student (student's existing record of survey responses). The independent variables are the two groups of students as defined above: the CATE and the Academic students participating in the CCSSE administration during the 2009-2011 school years. The dependent variable is the student engagement survey instrument, the Community College Survey of Student Engagement. Each question in the five benchmark areas will identify specific aspects of student engagement which will each serve as dependent variables.

Research Plan

In the collection and use of CCSSE data, community colleges have not segregated responses collected specifically by these two groups of students: CATE and Academic. Because of this, in the normal administration of the survey, it is assumed that there are no significant differences between the responses and student engagement levels between these two groups. This could very well not be the case. If it is not the case, each year community colleges are investing in the use of CCSSE data, the time and resources it takes to administer these surveys, the local staff members required to manage the program, and a host of other administrative and operational resources without gaining

visibility of the results from one of its largest sub-populations, or at least gaining the knowledge of their needs and perspectives.

The purpose of this study is to determine whether there is a significant difference between the results reported on a student engagement survey between the two independent variables, the groups of CATE and Academic students, and the numerous dependent variables identified through the CCSSE. Using nonparametric statistics, the study will compare responses in five benchmark areas: Active and Collaborative Learning, Student-Faculty Interaction, Academic Challenge, Support for Learners and Student Effort. If a significant difference exists between these groups, community colleges could reevaluate their use and administering of this instrument and expand related student improvements to include a greater majority of their students.

The primary research methodology is quantitative and the research design is causal-comparative using ex post facto research. This study employs a quantitative methodology because the data is exclusively numerical. The research design is causal-comparative because the study's research questions will examine the differences in responses between two groups of students, the independent variables, and a host of related dependent variables. This design is appropriate when comparing results taken from two homogenous groups utilizing existing data.

This report is based on data collected from the 2009 and 2011 school years, thus existing data. It will be a summative study that will make a judgment regarding whether a statistically significant difference exists between CCSSE data between Academic majors and Career and Technical Education students in the five benchmark areas CCSSE was designed to measure. Specifically, the study will analyze existing survey results

from the responses from 1,363 student records from the 2009 and 2011 school years from four participating community colleges in Texas.

Definitions

Academic- standard academic majors in subjects such as Math, Science, English (Astin, 1993).

Academic Challenge: A student's numerical assessment of how academically challenged the student was in a particular course (CCSSE, 2009).

Active and Collaborative Learning: The amount of time students spend actively involved in activities that increase learning and interactions with other students and members of the college environment (CCSSE, 2009).

Benchmark Areas: Five key aggregated areas of concern or subscales used to measure student engagement (CCSSE, 2009).

Non-traditional students-college students who are over the age of 25, generally attend college at night, and have other competing personal priorities (Andom, 2007).

Support for Learners Benchmark Area: The amount of services and actions a college provides to assist students with academic and career planning, academic skills development and other services that affect retention and learning (CCSSE, 2009).

Student Effort: The reported amount of effort a student expends in activities related to academic success (preparing drafts of papers, reading books, preparing for class, tutoring or using writing and computer labs, etc.) (CCSSE, 2009).

Student Engagement-the level and extent of college involvement the student engages in on a regular basis on and off campus (Marti, 2009).

Traditional Students- fulltime, day college students with academic majors, and who are generally under the age of 25 (Hermon & Davis, 2004).

Chapter Two: Literature Review

Introduction

The interest in student engagement stems from a concern with several aspects of the college student: student attrition and retention, social and intellectual development; appropriate and challenging curriculum; job placement and skills; and overall academic performance. Students who do well academically are not the ones leaving the campus before the first semester ends. This interest in student engagement and overall student success brings a lot of attention to any facet of the college experience that contributes to increasing engagement levels, particularly student retention and academic performance. Because of the positive correlation between student engagement levels and the activities known to contribute to student success, over the past 40 years, researchers have sought to find solutions to practically every variable affecting community college productivity and student growth and development. Engaged students out-perform disengaged students in every area. These positive relationships drive the direction for most community college program changes and process improvements.

Student engagement has also been identified as having a positive effect on several aspects of the college experience. For example, studies have confirmed a positive relationship between student engagement and (1) student persistence (Carlan, 2001; Tinto, 1997, Chapin, 2008); (2) student participation in educational research projects (Krabacher, 2008; Glen & Diament, 2005); (3) the effectiveness of supplemental instruction (Mack, 2007; Castillo, 2007); (4) with the success of underrepresented or low income students (Balasbramanian, 2007; Snyder, 2008; Schuetz, 2008); and (5) attrition, retention, and graduation rates (Deberard & Julka, 2004; Wyman, 1997; Summers, 2003; Napoli, 1996; Owen, 2003; Ruthig, Perry, Hall, & Hladkyi, 2004; Scott-Webber, Marini

& Abraham, 2000; Stephens, 1998; and Rhodes & Carifo, 1999). Student engagement has also been identified as positively affecting the students' buy-in of the vision or mission for the school (Bryant, 2001, Burke & Minassians, 2004; Todd & Baker, 1998; Sedlock, 2004).

Academic performance remains the best indicator of student success (Brown, 2003; Kuh, 2003). Student engagement has increasingly gained the attention of community college leaders as they seek ways to improve academic performance for the special populations of students they serve. Several studies supported the relationship between student engagement and academic performance. The greater the level of student engagement, the more positive the academic results will be (Qunitet, 2001; Evelyn, 2004; McClenney, 2004; Schuetz, 2005, Chapin, 2008; and Phillips, 2007).

These and many other factors that impact student engagement levels make it all the more important to have adequate representation into any effort to improve the community college experience and the related academic successes that keep students returning after each semester. When a subset is not included, there is no way for their needs to be addressed or for that group to perform at the same or higher level than others. Not only could this problem cause this sub-population's needs to remain unidentified or invisible, it could also contribute to the CATE/Workforce student's lower academic performance, higher attrition rates, or lower quality of college experience overall.

After providing a comprehensive theoretical and conceptual framework for the study, this review will explore a variety of variables related to community colleges, student engagement, traditional and non-traditional students, as well as CATE and Academic community college students. First, it will review results from similar comparative studies between community college students from a variety of perspectives.

The review will then focus on the Community College Student Report, the national survey instrument used to measure these variables and the one that will be utilized in this study. Next, it will look at the history, growth, development and current state of the American community college, a unique level of education found only in this country. It will also provide a thorough review of today's diverse community college sub-populations, including the demographics of age, race, gender and socioeconomic status, and the Career and Technical Education (CATE) student in particular. Emphasis will be placed upon the CATE students' characteristics and community college experiences, the focus of this study.

The final portions of this review will focus on the effects that student engagement levels have upon academic performance, enrollments, college ratings, academic preparation, institutional effectiveness, student services and success, faculty interaction, the college environment, participation in civic activities, and early childhood experiences. Lastly, it will take an in-depth look at the notion of student engagement itself and its overall impact and effect upon the total community college experience.

Conceptual or theoretical framework

At the foundation of every student engagement measurement is how well the student performs academically or, more concretely, how they learn. This study is based on adult learning theories. Educators and social scientists alike have recognized the multi-faceted approach to the learning process and that it involves more than one dimension; it involves many dimensions of multiple processes and stimuli. The recognition of the adult's own input into the process is vital to understanding learning among adults. Theories that address multiple dimensions generally present in the adult student have a far greater chance of capturing the essence of the dynamic learning

process (Akiba & Alkins, 2010).

Adult learning theories relate to this study because the CCSSE attempts to gather data from several different factors or elements of the student's learning experience, not merely their GPA or standardized test score. It recognizes that there are many dimensions to a student's learning and therefore all aspects must be included in a comprehensive evaluation of the student's experiences and outcomes.

To establish the theoretical basis for this study requires the review of four major orientations to learning; a general review of theories related to overall student development and learning styles; and then several related adult learning theories. Adults learn and migrate through the academic process differently than younger children and consequently require different support facets in order to be successful in the process. There are a variety of theories and approaches related to student engagement and to learning overall and adult learning in particular (Vaccaro & Lovell, 2010).

The four major orientations to learning are behaviorism, cognitive, constructive, and social. Behaviorism, with its roots in the psychological studies conducted by psychologists Pavlov, Skinner and Watson, focuses on a change in the learner's behavior. It has components such as behavioral objectives, competency-based education and skill development and training. Using stimuli from the external environment in the typical stimulus/response relationship, the teacher manipulates the stimuli to solicit a change in behavior and then rewards or punishes the student based on the existence or absence of the desired change. Success is measured by the external, objective changes in behavior alone; no thought is given toward cognitive development or processes. Educational theories based on this orientation to learning will be limited to and focused on external behavioral observation. They ignore the cognitive and other processes and stimuli

embedded in the learning process (Watson, 1913).

Unlike behaviorism which ignores mental processes altogether, cognitive learning focuses on the brain as the center of all learning. It ascribes to the notion that the learner's mind is like an information processor or computer. As the brain develops and we learn more about it, learning also increases. Learning is associated with such terms as information processing, mapping and schemas. Learning theories based on this orientation consist of structural learning, scripts, and cognitive constructivism (Mayer, Salovey, & Caruso, 2000).

Constructivism is the notion that through personal experiences, learners construct their own understanding; experience is the key and decipher for learning. In education, these theories remove the traditional superior knowledge of those instructing in exchange for the students' experiences making the student and his experiences the best source for all learning and knowledge (Bryant, 2001; Cross, 1981; DesLauriers, Hohn, & Clark, 1980).

Social and situational orientations to learning extend the learning environment beyond the classroom and brain development alone and into social settings and other situations of life. It defines learning as a "relationship between people and environment" (Alfred, 2009, p. 334). The teacher is a facilitator for learning. It is the teacher's job to develop "communities of practice" (p. 340) so that the free exchange of information between participants can flow uninhibited by distractions or other interference. Learning theories based on this orientation include modeling, imitation, demonstration, social interactions and observations geared toward new learning from among those participating in the community of practice (Wenger, McDermott, & Snyder, 2002).

Identified as social-constructivist, these theories were identified as being founded upon andragogy principles. While researching literacy learning among adult prisoners, one researcher identified this relationship with these words: "…social-constructivists studied ways adults construct knowledge through social networks and regarded their relationships, social activities and communities of practice as learning resources" (Muth, 2008, p. 265). There is an element of social development in several adult learning theories.

In addition to the basic learning orientations, it is widely accepted, though also highly criticized, that adult students use a variety of learning styles. These learning style theories separate students according to their most effective ways of learning or processing stimuli. These range from David Kolb's converger, diverger, assimilator and accommodator to Flemings' VARK Model, categorizing learners as visual, auditory, reading and writing or kinesthetic (Akiba & Alkins, 2010).

General student development theories that relate to student engagement include Eriksen's Eight Stages of Psychosocial Development, three of which are related to adults; and Piaget's Stage Theory of Cognitive Development. Eriksen's development theory focuses on the personality development from birth through death. It considers the impact that other external sources (parents, and society as a whole) can have on this area of development. Eriksen believed that every person will go through these steps in their lifetime and that they progress through them in this order. They coincide with the eight distinct stages he also identified in this theory (Erikson, 1984). Piaget's Stage Theory of Cognitive Development focuses on four progressive developmental stages for children. While none of his stages apply to adults specifically, because of its progression and

consecutive order of events, his theory of cognitive development has been the basis for several cognitive learning theories related to adults (Piaget, 1936).

Two social development theories that contribute to the theoretical basis of this study are Lev Vygotsky's Cultural-Historical Development Theory and Albert Bandura's Social Learning Theory. Vygotsky's theory included an in depth analysis and recognition of culture as a primary element influencing learning. He identified culture as "the prime determinant of individual development" (Vgotsky, 1978). He developed "Zones of Proximal Development" as a way to measure what a learner knows or can do with help, versus what a learner knows or can do without help. By definition, this zone is, "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).

Unlike Vygotsky who focused exclusively on the components of culture, Albert Bandura's Social Learning Theory focused more on the social interactions between people in the learning process and the outcomes of those interactions, what he called "observational learning" (Bandura, 1999, p. 21). He stated that adults learn better when they can observe, imitate, or have learning modeled for them because adults primarily learn from each other in social settings. He intertwined learning with the importance and significance of the social setting when he asserts "that higher mental functions, such as thinking, logical memory, and human consciousness, have their origins in human social life" (Bandura, 1999, p. 111).

Social theories such as the two mentioned here, and many others, relate to this study because the CCSSE attempts to gather data from several different factors or

elements of the student's learning experience, not merely their GPA or standardized test score. It recognizes that there are many dimensions to a student's learning and therefore all aspects must be included in a comprehensive evaluation of the student's experiences and outcomes.

The concept of adult students as lifelong learners is an example of the length of time and the scope of learning that has to be present in any legitimate review of adult learning (Kang, 2007; Wenger, 1991; Clardy, 2005). Therefore, the learning theories that focus on student-centered, experiential and lifelong adult learning are the ones most closely associated with the aims of this study. These include Malcolm Knowles' Adult Learning Theory (Knowles, 1998); Mezirow's Theory of Transformational Learning (Mezirow, 1981, 2000; Merriam, 2004); and, Carl Rogers' Experiential Learning Theory (Rogers & Freiberg, 1994). Each of these theories is based on a level of student involvement in order for successful learning to occur (Kolb, 1984; Murugiah, 2005; Chisholm, Harris, Northwood & Johrendt, 2009).

Recognized as the pioneer for adult learning theories, Malcolm Knowles introduced educators to adult learning theories based on andragogical principles. Originally introduced in American education by Eduard Lindeman in 1926, andragogy, a concept that distinguishes between the ways adults learn as opposed to how children learn, has been the foundation for many experientially-based learning theories. He expounded on this idea by saying that "the whole of life is learning" (Lindeman, 1926, p. 6). With elements of personal reflection (Dewey, 1938; Kolb, 1984), self-planning (Cell, 1984) and social learning (Freiré, 1970), andragogy included multiple factors in the process of adult learning. As a result, these theories propose that the students' overall life experiences form the basis, propensity, and foundation for their learning. It suggests that

any meaningful learning in a classroom or online setting will take these and other life experiences into account.

Other related learning theories include Problem-based learning where students attempt to solve real-world problems as part of the learning process (McMaster University, 1971); Kolb's Experiential Learning (1984); and, Lave's Situational Learning Theory. Each of these theories considers various aspects of the student's overall experience (Kang, 2007).Although not without criticism ranging from weak theory and poor research (Clardy, 2005) to an over-emphasis on self-reliance and self-interest (Pratt, 1993), andragogy recognizes the distinct differences between learning and teaching techniques between adults and children.

Mezirow's Theory of Transformational Learning says that adults learn best when they reflect upon their life experiences and can transform that knowledge into, and in relationship to, their experiences. He states that learning occurs when adults are "becoming critically aware of one's own tacit assumptions and expectations and those of others and assessing their relevance for making an interpretation" (Mezirow, 2000).Comprised of 10 stages and three primary levels of reflection, content, process, and premise, this theory focuses on the learner's developmental levels in many forms to include social cognitive, and experiential.

Centered on the idea that development in all forms contributes to learning, this theory includes in the transformation to learning the experiences that comprise the adult's ability to "critically reflect and engage in rational discourse" (Mezirow, 1978). These two elements are fundamental to the theory that has as its primary goal independent thinking and changes in behavior as a result of the learning. Life experiences and the

adult's ability to reflect upon these experiences opens the mind to learning and are central to the learning process (Merriam, 2004).

Similar to Knowles and Mezirow, Carl Rogers, a psychoanalyst whose work in the field of psychoanalysis centered on the person instead of the therapist, reversed the emphasis for results. In fact, he called client-centered therapy, labeled cognitive learning as meaningless. In education, this type of learning involved memorization such as learning the multiplication times tables or the alphabet and, according to Rogers, had no real application in life. The focus of his experiential learning theory was total student involvement. According to Rogers, learning occurred when the student participated and had complete control of the process, evolved from real-world experiences, and included an element of self-evaluation of which the student determined the method and definition of success (Rogers & Frieberg, 1994). Only experiential learning was significant because it included the student's needs and wants. It influenced other adult model theories (Cross, 1981; Knowles, 1971).

In the community college curriculum, the workforce or technical programs center on a hands-on approach to learning, while academic programs such as Math, English, and History do not. Through a combination of student development, social, cognitive and normal development, and adult learning theories, the theoretical basis of this study is established. Student engagement includes elements of adult development, both socially and academically, as well as learning processes and results, namely academic performance and retention. Any efforts geared toward improving any of these adult student areas have application in this study, particularly those based on experience and adult student involvement.

Other Comparative Studies

Over the last 40 years, several states and other entities have conducted studies to compare the differences in results when nontraditional students' responses are isolated from and compared with those of traditional students. Non-traditional students have been compared to traditional students on everything from HIV infections (Opt, Loffredo, Knowles, & Fletcher, 2007) to stress levels and coping skills (Morris & May, 2003; Giancola, Grawitch, & Bochert, 2009). Whether this distinction is made along the lines of race, gender, age, socioeconomic status (SES), academic majors or performance, or any other such factors, the body of research overwhelmingly suggests that different student populations yield statistically significant results.

For example, in 1995, researchers in a study at the Milwaukee Area Technical College (MATC) compared student survey results between 579 technical students and 5,071 students in the college's overall student population. Unlike the majority of college students at that time, comparatively, these results supported that the technical students were "more likely to be female, have a lower average family income, have chosen MATC based on program rather than on schedule and/or cost, already have a vocational diploma/certificate, and be a full-time student" (Advincula-Carpenter, 1995, p. 1). Obviously, these results differed dramatically from those of the general study body.

Differences surfaced immediately when comparing the technical students' academic performance in certain subject areas with that of the nontechnical college student. Over 30 years ago, Dr. Herman Estrin, Chairman of the Committee on College English for the Scientific and Technical Student, conducted a study to determine whether Engineering and Technical students who graduated from these programs had acquired the skills and training to perform well on their jobs. It focused on the basic academic skills

of reading, writing and math. Overwhelmingly, the traditional, daytime students were rated as prepared (by their employers), while nontraditional students graduating from the evening courses in the same subjects were rated as not prepared (Estrin, 1963).

Further, this study concluded that these students viewed themselves differently and teachers viewed them differently also. For example, the technical student did not consider writing, math and English courses as important to their overall goals while the Engineering students listed these courses as critical to their studies. These perceptions, real or perceived, manifested in the dramatic differences in academic performance between these two subsets of students in these subjects areas. Engineering students out-performed technical students by over 40% in these subjects (Estrin, 1963; Koltai & Wilding, 1991).

Many other researchers have explored the differences between these two groups on several other dimensions. For example, in Washington State, researchers using U.S. Census bureau data, established SES identifiers for students attending their local community college. Combining this information with median household incomes, educational attainment (the number of household members with bachelor's degrees), and parental occupations, they placed students in one of four quadrants ranging from low to high on both scales. Students in the lower quadrants (low SES, household incomes, number of educated household members and low parental occupations) responded statistically different from those in the higher quadrants (higher SES, household incomes, number of educated household members and higher parental occupations). Applicable to this study is the fact that the lower quadrants contained the largest number of nontraditional students (Prince, 2006). It should be no surprise that students from

varying backgrounds and who are in different places in life and education will most probably produce different results on student surveys.

Studies have compared two subsets of students on their performance after graduation. In Wisconsin, over 1,600 student surveys were sent to the graduates of the Wisconsin Technical College to assess their job performance and acquisition one year after graduation. Over 1,200 surveys (76%) were returned. With 87% of the responses returned coming from white female students, researchers elected to compare those results with the remaining pool of survey results. The differences were obvious and undeniable. Nearly half (46.3%) of the females were not working in their respective careers, while 87% of the males were. They also shared different opinions about whether the program contents adequately prepared them for their new careers. They also had dramatic differences between their engagement efforts and the effect, if any, these had upon on their overall learning (Wisconsin Technical College System Board Follow-up Report, 2002).

Studies comparing community college student subsets with the general student body have also focused on differences in the reasons why students attend community colleges and select particular majors. Researchers at Milwaukee Area Technical College (MATC) compared survey results among their technical students in the Consumer and Hospitality Services program with those gathered from the general population of students. Using a survey instrument that they administered biennially, they found that the reasons for attending MATC, the educational backgrounds and educational goals were significantly different among the two subsets of students (Advincula-Carpenter, 1995).

Some studies have also focused specifically on student engagement levels. In Minnesota, using historical data from students and teachers, the researchers categorized

the participating schools by their levels of student engagement (high, medium, and low). Then they administered the same survey to technical and non-technical students. Looking specifically at the amount of math and science courses taken at the high school level among the two populations, and using a paired samples t test, differences quickly emerged. At the medium engaged schools, there was "a greater disparity in the amount of math and science courses taken between Information Technology and non-Information Technology students…" (National Research Center for Career and Technical Education, 2008, p.9). These differences surfaced throughout the survey as each group indicated a different level and type of need to address the disparity.

Community College Student Report (CCSR)

This survey instrument continues to be used by a growing number of community colleges each year. Over 600,000 community college students have taken the survey over the last seven years, and over 548 community colleges from 48 states, British Columbia and the Marshall Islands have participated each year (McCleney, 2007). This report is a 38-question survey that is managed through the Community College Survey of Student Engagement (called CCSSE, pronounce "sessie") administered through the Community College Leadership Program at the University of Texas in Austin. It has been administered annually since 2001 with its tenth administration being completed in the Spring 2011 semester. The survey and the name of the program management system are used synonymously among CCSSE member colleges. The survey will be referred to as the CCSSE throughout this writing.

CCSSE developers defined the primary use for the data from annual survey results as being, "intended to be used to understand student engagement and to serve as a tool for improving teaching and learning" (Marti, 2008, p. 1). The use of student survey

results for these purposes originated with prior measurement attempts at various levels of education, especially 4-year universities. At the 4-year college- and university- level, the most popular instrument is the National Student Engagement Survey (NSSE, pronounced "nessie") in use since 1999. It is currently used by over 1,300 colleges and universities in America and Canada (NSSE, 2008; Kuh, 2001b). Participating colleges also receive data relevant to their states, cities, communities and individual campuses (NSSE, 2009).

Consistent with the purpose and use of the NSSE, from which CCSSE was largely adapted, these data allow community colleges to compare student services and programs to the needs as identified by student responses regarding the effectiveness and utilization of those services. Since its inception in 2001, community colleges have used the results from the CCSSE to develop local programs, change local policies, or initiate changes in student services all in an effort to improve overall student engagement. The common goal of high quality educational practices and offering effective programming and services hinged on the results of this survey.

CCSSE data provided community colleges with what the students identified as their needs, how much time they were spending on related and unrelated school tasks, and how responsive they thought their school was in relationship to meeting their needs. All are areas that, since the beginning of the student engagement concept, have been supported by data to increase student engagement levels and to support learning (Pace, 1980).

As the primary producer of this type of information, CCSSE data have been used to improve student support services, campus activities, and student-centered programs, changes and improvements that were made and dollars spent based solely on the data

collected from this survey. Colleges make the investment of both time and resources because of the effectiveness and reliability of the data gained through this process.

A recent review that supported the instrument's use in both research and practice, concluded that its results could be legitimately used to "inform institutional decision-making with regard to teaching practices, campus design, and institutional culture" (Marti, 2007, p. 2). The questions on the survey "pertain to time spent on activities that previous research has shown to be related to desired outcomes of a college education" (Marti, 2008, p. 2). The importance of the CCSSE survey results can be seen in the fact that they rank in the top concerns of community college presidents (McClenney, 2007).

Because of its significance and proven positive impact on student success indicators, community colleges closely monitor the survey's management, use, and administration. Community colleges invest time and resources to ensure the integrity of the administration and management of the survey each year (CCSSE, 2011). Based on the community college's size, as many as five full-time positions can be involved in the management of the data and the administration process. As a minimum, a school must have one full-time administrator who serves as the CCSSE monitor. This person has the primary responsibility of ensuring that CCSSE is administered as per the directions from Austin. They also maintain the data and compile reports for college administrators.

Despite the care that is taken to ensure the accuracy of the data collection process, nontraditional students who attend classes solely during the evening hours do not have the opportunity to participate in these surveys as often as traditional daytime students. This conclusion is supported by the fact that the selection process that determines which sections will be surveyed each year leans heavily on day time course offerings, and opportunities to participate increase with the higher number of enrolled hours per student.

Thus, the fulltime student has more opportunities to participate in these surveys than do the part-time student of which a large majority of the CATE students are part-time. Additionally, the CATE students comprise a large majority of the evening students where fewer courses are offered in general. The Career and Technical Education (CATE) student comprises a large majority of the nontraditional, part-time, and evening student body and thus, do not participate as often as traditional daytime students.

Research supports the fact that part-time students are less engaged than full-time students (Andom, 2007; Borglum &Kabala, 2000; Bragg & Rudd, 2007; and Prince, 2006). Even their classroom experience "appears to be systematically less engaging" (McClenney, 2007, p 14.). This reduced level of participation and engagement in general could mean that their needs are not being made visible to decision makers who are trying to improve student engagement levels for all students.

There are three inherent contributing conditions that support the assertion that these students may not participate in the survey administrations as often as the traditional daytime students. One condition is the administration process for selecting participating classes, a process that is based upon the total number of course offerings, and the tendency for these students not to be present in many of the regular education classes, a large majority of the overall course offerings.

The administration and selection process does not intentionally target any specific student segment unless there is a program-level emphasis on such for that year. For example, in 2009, there was a focus on students' use of social networks. During this administration, the formulas were adjusted to intentionally target and include a sizable subset of these students who answered yes to a general question regarding social networks. When a student answered yes to the use of social networks, they were asked a

series of additional questions designed to assess their level of usage. These responses were segregated for additional study related to this topic. If a student answered no to the use of social networks, they could skip the section pertaining to social networking.

In other years, there were specific populations of students selected (i.e. nursing or Veterinary Tech students). In these cases, the program selection process increased the number of surveys required from courses directly related to these majors, allowing for more participation from these students than that of previous years (Marti, 2009). Under a normal administration, no such focus exists.

In a recent article entitled, *Using the Community College Student Report in Research and Practice,* research consultants evaluated the validity and reliability of the instrument using confirmatory factor analysis to demonstrate whether the instrument supported and represented underlying constructs. They also measured variances across demographics and yearly administrations. Using data collected from three years of administering the instrument and a total of 284,000 respondents from 512 participating schools, researchers converted all scores to a standard high-end/low-end scale to gain uniformity in reporting.

The problem becomes even more vivid: there are not enough studies focused solely on CCSSE results taken from CATE students that could make their needs visible, or determine whether their needs differ from traditional, academic majors, along with their use of student support services. Without this data, community colleges could invest in program improvements and student services that fail to address the needs among this growing population of students.

The American Community College

The educational level that is the focus of this study is the community college.

Community colleges have escalated in growth over the past 30 years and have been labeled "the most important higher education innovation of the 20th Century" (Witt, Wattenbarger, Gollattscheck, & Suppiger, 1994, p.1). The tremendous growth among community and technical colleges is attributed first to the low tuition cost, open admission practices, flexibility, and geographic locations (Bleumnstyk, 2008). It is also attributed to their responsiveness to community and industry needs in the areas where these schools are located.

Among other economic and social factors related to community college growth, the increase in technical or workforce programs in particular, is a direct result of partnering efforts with local businesses and industry (Lucas, 1994; Bragg & Ruud, 2007; Coley & ETS, 2000; Hull, 2005, and Townsend, 2003). This increase has allowed for increased student employment opportunities supported by these alliances and partnerships, results that continue to increase these programs' popularity (Jacobs & Doughtery, 2006).

Although its exact origin is not known, the term community college (formerly called junior colleges), was originally introduced by President Harry Truman's Commission on Higher Education in 1946 (Borglum & Kubala, 2000). Chronologically, the two educational ideas credited with the start of community colleges evolved simultaneously in two different states apparently without one having any knowledge of the other (Price, 2004).

The first idea appeared in practical form in the early 20th Century at Central High School in Joliet, Illinois. Leaders at this school developed the first successful vocational program, adding two additional years to the high school curriculum to further develop a trade or skill (Cohen & Brawer, 2003). The impetus of such a program is attributed by

many to the economic conditions during the Great Depression. Historians recorded this relationship with these words: "The demand for vocational and terminal programs grew rapidly during the Depression. Instead of enrolling in traditional liberal arts programs, many Americans opted for programs that trained them for an existing job" (Witt et al., 1994, p. 101). These programs increased in popularity also among high school students who would rather go straight into the workforce as opposed to college. With high job placement rates, these programs increased rapidly over the next few years.

A second and similar idea arose at or near the same time as the vocational programs did in high schools in Joliet at Vincennes University in Indiana. Vincennes added two early years of college to several programs including college prep, smaller classes and extra-curricular activities. Between the combining of these ideas, two additional years of high school to develop a trade, and adding two earlier years geared toward extra-curricular activities, smaller classes, and close faculty-student contact to the 4-year university program, the community college as we know it today was born (American Association of Community Colleges, 2009).

In 1960, over 640,000 students were enrolled in 2-year colleges. A decade later, that number rose to over 2 million, or 30% of all undergraduate students (Worsnop, 1996). Today, over 6.7 million students enroll in community colleges each fall in credit courses and another 5 million enroll in noncredit courses (NCES, 2008; American Association of Community Colleges, 2009). In total, they represent nearly 45% of all undergraduate students in America.

In Texas, the state where this study will be conducted, community college enrollment experienced a 24% increase in just four years from 447,998 in 2000 to 557,358 in 2004. Since 1995, Texas community college enrollments surpassed public

university enrollments in that state and continue to do so (THEACB, 2009; College Profiles, 2008; College Profiles, 2010). Enrollments in technical certificate and degree programs have steadily risen consistently at or near the same pace.

Community colleges were originally developed with the notion that they would provide educational services and training in direct response to the community's needs. Unlike the original 2-year schools that were viewed as extensions of high schools, today's community colleges comply with educational standards and meet strict accreditation requirements on the same scale as 4-year universities (Lorenzo, 1987; Marklein, 2007; McClenney, 2004).

Their increasing popularity, however, has not deterred the majority of them from their mission and purpose. In fact, some believe that they are often so engrossed in their local commitments that they forget their significance on a national level. Researchers reporting on the findings from over 500 community colleges summarized this concept up with these words: "Because community colleges are intensely local in perspective and mission, they often fail to recognize their broader importance to the nation's economic and social progress—in fact to the growth and success of American democracy" (Witt, Wattenbarger, Gollattscheck, & Suppiger, 1994, p. 184). At the local and state levels, community colleges continue to pursue relevant and meaningful inputs from its servicing populations in order to provide curricula and programming that meets that needs of its varied sub populations of students.

Throughout community college history, three states have dominated the community college growth by size and by setting trends. They are California, Texas, and Illinois respectively. Texas remains among the leading states in community college enrollments each year. As such, its policy is often duplicated in other community college

systems throughout the country. With regard to the state's policy for community colleges, the Texas Education Code, Section 130.003 states that the purpose of the public community college is to provide:

1. technical programs leading to associate degrees or certificates.
2. vocational programs leading directly to employment in semi-skilled and skilled occupations.
3. freshmen and sophomore courses in arts and sciences.
4. continuing adult education programs for occupational or cultural upgrading
5. compensatory education programs
6. workforce development programs.
7. adult literacy and other basic skills programs for adults (THECB, 2009).

By comparison between academic and technical programs, four of the seven purposes are directed distinctively toward technical and vocational programs. It is critical that these students' needs are identified and responded to in order to provide equal opportunities for educational success. If they are not included in the data collection to an equal degree as the traditional, academic student, it will be impossible to know whether community colleges have met those needs or whether the programs designed for this purpose have done so. Because the relevance of student engagement is supported by the data, technical students' inputs are needed in a segregated format so that colleges can respond with appropriate actions to increase their levels of engagement.

When the requirements from this large pool of students are made known through an intentional collection of data from this community only, community colleges can gain visibility of these students' needs and subsequently better develop corresponding programs geared toward improving engagement levels among this population. As

summarized in a recent review on the effective uses of CCSSE data, "Student engagement data often point to aspects of student and institutional performance that a college or university can address almost immediately to improve the quality of the student experience" (Kuh, 2005, p. 12). Obviously, these improvements cannot take place if the needs are not known.

With the very limited available research on CATE students' exclusive survey results, it has been practically impossible to determine whether there is a statistical difference between CATE students and traditional students in the responses on the survey, or whether the responses and the actions taken by colleges to improve student engagement ever actually manifested themselves in this community. It has also been difficult to determine whether their input was included at the same level as their overall participation at the community college level. Without this type of detailed and focused research, the answers to these questions will remain unknown.

Community college sub-populations. There are many demographical factors present on college campuses of all sorts; community colleges have an even larger proportion of these diverse students (THECB, 2009). Many of them are part-time and evening students and most are older and have families and other responsibilities, thus they are nontraditional students regardless of which parameter is used to identify them as such. They may be identified by academic majors, age, gender, race, socioeconomic status (SES) or educational goals. They include first-generation, part-time, minority, non-resident/commuter, underprepared, low SES, minority and disabled students (Pascarella, Smart, & Ethington, 1993; Prince, 2006; National Research Center for Career and Technical Education, 2009).

There have been several attempts to identify any unique needs these subpopulations may have, particularly women and racial minorities (Alfred, 2009; Bailey, Jenkins, & Leinbach, 2005; Benshoff, 1993; Carney-Crompton & Tan, 2002). A most recent example is the Building Engagement and Attainment for Minority Students (BEAMS) survey. Its aim is to collect data from this specific population to ensure changes made to campus policies and programs take their positions into consideration. To do this, they administered surveys among these populations at historically Black colleges and universities and Hispanic-serving college communities using NSSE data. They found that the results were significantly different when compared to results from the general population (Institute for Higher Education Policy, 2008).

Student engagement and age. Perhaps one of the most popular characteristics used to categorize community college students, age is often the great divider (Andom, 2007; Bishop-Clark & Lynch, 1992; McGlynn, 2007; Hermon & Davis, 2004). A student's age affects how they manage and cope overall with the community college experience. Several studies suggest an increase in the non-traditional student aged 25 and above as another of the rapidly-growing population segments on community college campuses (Andom, 2007; Bishop-Clark & Lynch, 1992; Hermon & Davis, 2004; Jamilah, 2005; McGlynn, 2007; Owen, 2003; National Center for Education Statistics, 1995).

Data also suggest an increase in the number of traditional college student below the age of 25. In 2005, the U.S. Department of Education released the results of its most recent assessment of the trend for traditional students. In this study, the researchers reviewed 8,900 college transcripts of students they followed from the 8th grade. They found that community college enrollment for students under 24 years old had risen to

42%, up from 32% just 10 years ago (Jamilah, 2005). Their conclusions advised community colleges to adjust academic planning and student services to accommodate these two different and increasing populations.

Some of the differences were that only 27% of younger college students thought of themselves as employees who were also attending college; more than 74% of older students accepted this description. Nearly 30% were minority students while this number is less than 25% for the older students. Fifty-eight percent of the non-traditional students had children when they entered the community college; only seven percent of the younger students had children. The younger student was more likely to transfer in the next 6 years (about 50%), as opposed to only 18% of older students. And, younger students were far more likely to return to school after the first year, 72% versus 49% for the older students (Jamilah, 2005). Learning styles, stress reducers, and educational goals differ by age among students (Owen, 2003). The results suggest that community college academic success is influenced by other variables; in this case, the variable was age.

Several studies have also identified positive relationships between age and college GPA. One such study, through a correlation comparison involving 158 community college students aged from 16-71, attained a correlation of +.33 and concluded that there was a positive relationship between age and GPA (Carlan, 2001; Moffat, 1993). Other areas include graduation rates, successful transfers, academic integrity, and reaction to transfer shock are documented in studies where the adult learner outperforms the younger student (Carlan, 2001).

One college professor wrote an article entitled, “The Mixed-Age College Classroom” when he observed some differences between the older, nontraditional students and the traditional students enrolled in a technical program at the community

college level. His perspective supports the large body of research that suggests that these students have different and varying needs when compared to younger students. He summarized those differences stating that: "Nontraditional students tend to treat their professor as a peer, are more internally motivated to learn, prefer informal learning, and are more goal directed" (Bishop-Clark & Lynch, 1992, p.117).

First- and second-generation students. Among the subsets of students attending community colleges, the first- and second-generation students have been the focus of several student engagement studies over the last 10 years (Carnevale & Fry, 2000; Terenzini, Springer, & Yeager, 1996, Pascarella & Nora, 1996; Kuh, Cruce, Shoup et.al, 2008). Consistent in the data is the fact that these students do not remain in college, nor do they perform as well academically, and do not graduate at the same rate as students with college-educated parents. First-generation students are 15% less likely to persist to the 3-year level than are second-generation students (Warburton, Bugarin, and Nunez, 2001).

While these studies highlight and support the academic differences between these two groups, what many of the studies failed to do was identify specific aspects of the first-generation student's experiences in colleges or any specific variables that may have contributed to this difference. This is consistent also with other subsets of minority students as well. By every category, it is a daunting task to assess the impact of any one variable on such a massive subset of students. In order to attempt inclusion of all, the literature review will include aspects of research from several subsets of these students. The technical student is represented in all. This is complicated further by the fact that the number of CATE students enrolled in community colleges for the first time each fall is increasing each year (Tirrell-Wysocki, 2009). In the 2006-2007 school year,

technical/workforce/career education students comprised 79.5% of the awarded associates degrees; while academic students comprised 83.3% and this gap is closing in each year (Tichenor, 2001; National Center for Education Statistics, 2009).Program and service improvements designed to increase student engagement overall, but that were not based on data from the CATE population as a collective group, or from which they were not participants, would not have a chance at meeting their unique needs with little to no visibility of their inputs.

The related result is that the CATE student does not have as many opportunities to participate in the CCSSE administration and therefore, are not equally represented in the data. This researcher taught CATE courses for 10 terms at a community college in Texas and 22 terms for a technical college in South Carolina. Both participated in CCSSE, yet this instructor never had a CCSSE administered in any of those courses. Whether that is typical or not is a matter for another study. What it clearly indicates is that the CATE student could take 32 courses and not participate in the CCSSE. The potential is there for these students and their needs not to be made visible in the process.

The career and technical education student. This growing subset of the community college student population previously called the Workforce and now Career and Technical Education (CATE) student continues to expand. Predominantly, these students are non-traditional college students who want to continue in or enter into the employment sector in the same area in which they are studying, usually in an entry level position as opposed to the 4-year bachelor's degree graduate who is looking for management level careers. CATE students are seeking to complete a certificate or degree, or a few required courses without completing the certificate, and going directly into a related career field.

One of the challenges of conducting this type of research has been the broad definition of "technical students." In higher education, defining the technical student has caused some confusion. While reviewing the research literature, there were seven different definitions and nine categories of the technical student. Historically, the technical CATE student has been defined by both the basis of the program of study (scientific versus non-scientific courses of study) and by the purpose for the program of study (workforce or to gain employment) (Jacobs & Doughtery, 2006).

For example, students majoring in the biological or other sciences, including computer science, chemistry, or technical math, were also referred to as technical students. In 1963, a study conducted by the Department of Health, Education and Welfare was entitled *The Teaching of College English to the Scientific and Technical Student,* however, when reading the article, it is very clear that it is not discussing the Career and Technical Education student discussed herein. Instead, it is referring to a science, engineering, or math major (Estrin, 1963).

For the purpose of this study, a technical student is one who is enrolled in a Career and Technology Education (CATE) program, formerly known as Workforce or Vocational-Technical (Voc-Tech) programs. Essentially, the program of study should result in the student gaining entry-level employment into a specific career field, increasing current job skills, or advancing in that field upon completion. The term "vocational" as used in the high school curriculum was applied at the college level at the onset of these types of programs. A different type of student is attracted to these programs and a different type succeeds in them (Arfken, 1981; Azari, 1996; Bragg & Ruud, 2007; Carlan, 2001; Gearon, 2008).

This clear distinction is defined more fully in the policy brief for The Perkins Act of 2006. This Act was designed "to develop more fully the academic and career and technical skills of secondary education students and postsecondary education students who elect to enroll in career and technical education programs" (Meeder, 2006, p. 1).

Contrasting this specific objective with that of the American Diploma Project, where the focus is preparing high school students for employment and higher education, the Perkins Act sets aside funds directly in support of community colleges' technical programs. In order to compete for these funds, community colleges must demonstrate the growth and effectiveness of their technical programs, as well as introduce new technical programs every other year (Meeder, 2006). It is clear that the definition of a technical student in the context of this Act is the one related to the students going into the workforce in a specific industry upon completion.

Regardless of how technical students are defined, this population has a different level of commitment and engagement requirements based on these and other differences. These differences may contribute to standard assessment efforts improperly reflecting or identifying their needs. State and community college efforts to improve academic performance, attrition or retention rates among this vast and growing population may inadvertently omit their unique needs because of the many differences. Additionally, the efforts to independently study the characteristics of these various groups may have also contributed to the incomplete reflection of their total needs. In order to assess the totality of this population, the results of hundreds of studies would need to be combined and assesses collectively. Because this body includes students from many diverse groups, any attempt to analyze student engagement results must include data from all of these subsets comprising the technical student body.

Student Engagement

Student engagement has become a major concern for college managers and leaders who recognize its importance and impact upon college students' overall experience. The measure of student engagement includes the amount of adult student involvement in the academic process and community and the actions taken by the colleges to promote that engagement (Kuh, 2003). A recent review from the Community College Survey of Student Engagement states that, "Students learn more when they are actively involved in their education and have opportunities to think about and apply what they are learning in different settings" (CCSSE News, 2009). Student engagement and its effects upon the overall college experience are central to understanding college success at all levels ranging from membership in sub-populations to college environment.

Community colleges' interest in increasing student engagement levels is rooted in self-preservation: they want their students to succeed in school, enjoy the educational experience, and remain in school until they reach their goals. Retention is a big concern for community colleges. The investments made in projects that assist them in this endeavor have been deemed worthy of their expenses. Such is the case with student engagement and the annual investments made by community colleges into CCSSE survey and its results.

Similar to the accountability requirements for the No Child Left Behind Act for the K-12 level, higher education responds to the results from student engagement surveys as part of its accountability for the use of and state and federal dollars (Marockie, 1994; Bragg, 2000). Through the formal student surveys administered each year, they identify the degree, extent, and methods of student engagement. The results of these surveys are used by colleges and universities to create or restructure programs, to train and encourage

faculty and staff, to respond to students' needs in a variety of ways, and to direct campus life and activities toward increased student engagement (Astin, 1993a; Astin, 1993b; Bryant, 2001; Chapin, 2008; CCSSE, 2008).

Student engagement studied at all levels. Because of the positive correlation found in educational research between student engagement and student performance overall, student engagement has been studied at all educational levels. At the community college level, CCSSE is the most popular survey instrument to measure engagement levels. Over 600,000 community college students have taken the survey over the last seven years, and over 548 community colleges from 48 states, British Columbia and the Marshall Islands have participated each year (McClenney, 2007).

Student engagement has been measured for the incoming freshmen student, as well as the high school student. For the freshmen, to assess the specific and unique requirements of the first-time community college student, college survey managers recently developed and introduced the Survey of Entering Student Engagement (SENSE) which focuses on identifying those areas that contribute to the high early failure rate among entering college freshmen.

For high school, another instrument to measure their engagement levels was developed in 1997. Since such engagement sampling had proven useful at the college level, high schools expressed an interest in developing an engagement survey for their population. In 1996, under the direction of Indiana State University, the High School Survey of Student Engagement (HSSSE, 2008) was introduced as a measuring tool over 15 years ago. During the 2004-2005 school year, over 170,000 9-12 grade students from 167 high schools in 28 states completed the survey. Its focus was to identify those elements of the high school education environment that contributed to increased

academic performance and learning. After the survey was completed, participating schools received a "customized report", along with comparative data with other schools of similar size and programming (McCarthy & Kuh, 2006).

Efforts to measure student engagement continue with first year college students. The Beginning College Survey of Student Engagement (BCSSE), a product developed by CCSSE managers, collects data about students' level of participation in high school academic and co-curricular experiences. It is designed to gage their expectations of participation at the college level in order to closely approximate and predict engagement levels and potential success and endurance for the first semester of college (BCSSE, 2012).

The Community College Faculty Survey of Student Engagement (CCFSSE) was added seven years ago. It includes the faculty's perspectives on student engagement, faculty demographics, classroom practices, and their use of professional time (McCleney, 2007; www.CCFSSE.org). To date, over 200 community colleges have participated in this survey. Even at the post-graduate level, student engagement continues to be evaluated. Over the last two years, over 27,000 students at 85 law schools have participated in the Law School Survey of Student Engagement (LSSSE). Its purpose is to document "the quality of the law student experience" (LSSSE, 2008, p. 1). The results have been used for a variety of purposes: assessment and improvement, accreditation, benchmarking self-studies, curricular reform activities, alumni outreach, grant proposals, and recruitment and promotion (LSSSE, 2008).

Collectively, these different levels of education have shown interest in determining student engagement levels which supports the significance of the concept itself and its potential contribution to the education process in general. The remaining

sections of this review will examine the impact of student engagement levels on a variety of college experience variables that ultimately determine the quality of the overall college experience and the impact these variables have upon a student's ultimate decision of whether to return to school, or not.

Student engagement and academic performance. Student engagement has consistently been evaluated with respect to academic performance in specific subject areas, especially math, science, and English/writing (Sheridan 1979; Kimbrough & Weaver, 1999; Walker & Plata, 2000; Roberts, 1981; Koltai & Wilding, 1991). At the University of Colorado, researchers set out to prove that engagement would positively affect the failing grades of many entering freshmen students. Believing that the greater percent of studies done previously had assessed engagement at the macro level, these researchers sought to analyze it based on the impact to individual courses. Using 27 student engagement items, they surveyed a total of 266 undergraduate students and compared results with the College Student Experiences Questionnaire (CSEQ). In addition to validating the results from the CSEQ, by and large, their data also reflected that engagement positively affected learning and scores in both basic math and psychology courses (Handelsman, Briggs, Sullivan & Towler, 2005).

Throughout the literature, academic success and student engagement appear to be connected. The extent to which a student becomes involved in the college campus has been associated to academic success in several studies (Terenzini, Pascarella, & Bliming, 1999; Lamport, 1993; Astin, 1993). One study indicated that the level of student involvement is the single most important variable in social and academic performance. Theodore Swigart and Patricia Murrell (2001), researchers at the Center for the Study of Higher Education at the University of Memphis, summarized the impact of student

involvement with these words: “It is generally agreed, and supported by research, that the level of student involvement is a major, if not the most important, factor influencing what students gain from college” (p. 298).

Continuous concerns for community colleges throughout their history and remains so today are attrition, retention, and graduation rates (Deberard & Julka, 2004; Wyman, 1997; Summers, 2003; Napoli, 1996; Owen, 2003; Ruthig, Perry, Hall, & Hladkyi, 2004; Scott-Webber, Marini & Abraham, 2000; Stephens, 1998; and Rhodes & Carifo, 1999). With a 40-year history of nearly 50% student attrition rates, community colleges are interested in identifying ways to reduce this number. The studies listed above have found a positive relationship between student engagement and all three indicators listed above.

Student engagement and enrollments. Several other studies have been conducted that compare the results of technical and workforce students with traditional college students, even when academic programs reflect growth. When their school system experienced a 40% enrollment increase over three years, the Maui Community College conducted an analysis to compare student enrollment and academic performance in the academic/liberal arts curriculum with the enrollment in career education or technical programs.

The focus of this study was to analyze where the growth had occurred (whether among academic or technical students) and then to determine whether there were differences in academic performance as a contributor to that growth. It was determined that nearly 30% of the growth was attributed to technical programs. Additionally, if the limitations for shop space did not exist in agricultural and technical programs, the percentage would have been higher. Despite the class size limitations, researchers

concluded that "the demand for skills upgrading and training within growing tourism and building infrastructure on Maui has resulted in credible class sizes" (Sakomoto, 2003, p. 111). It was further determined, however, that Liberal Arts students consistently out-performed technical students in academic performance.

Expressing a concern regarding the small number of participants in some previous research attempts in this area, another related study used data from a national database of students who completed the College Student Experiences Questionnaire (CSEQ). They used a stratified random sample consisting of 3,000 students and analyzed it in three separate phases. The conclusion was that colleges cannot change the lineage of a student, but they can implement practices that decrease the odds that are already stacked against them (CSEQ, 2009). It recommended that colleges pay more attention to the unique needs these students have and work towards an environment that will help them "get ready, get in, and get through" (Pike & Kuh, 2005, p. 219).

Another study focused on Criminal Justice students in a Midwestern technical college and their low level of engagement as documented from their annual CCSSE survey. This study was unique in that it was initiated in spite of the program's success. The Criminal Justice Program was the school's largest program, graduating 94 Criminal Justice and five Security Loss Prevention graduates the year of the study. They had also attained a 90% employment rate 6 months after graduation. However, following their 1994 participation in the CCSSE survey, the school failed to meet the goals in four of the five areas on the survey.

Of the 532 full-time students participating in the survey, 283 participants were Criminal Justice majors. The results were viewed as a reflection upon this otherwise successful program. After conducting a local survey, researchers found that the high

ratio of adjunct faculty members (7:1) contributed to the low levels of engagement among these students (Totzke, 2007). As is the general practice, adjunct instructors do not have office hours, nor do they generally invest time outside of the classroom. The possibility of increasing contact between these instructors and students was minimal. Other positive aspects of the program had to contribute to its success.

When comparing enrollment and retention rates among and between the various classes of students at Midlands Technical College in South Carolina, researchers noted a significant positive correlation between the numbers of technical students enrolled in developmental studies when compared to Academic majors. This suggests that the technical student starts college with a reduced academic capability that they struggle to overcome throughout their college experiences, but have demonstrated increased learning in order to meet standard graduation rates and keep their enrollment rates up (Retention Report, 1992).

Student engagement and college ratings. While current research supports that engagement was positively linked to critical thinking and grades, it also concluded that certain colleges were more effective when converting student engagement into increased scores on critical thinking tests (Carini, Kuh, & Klein, 2006). The point is if engagement results do not change or improve the major areas where colleges are rated (academic performance including test scores, retention, persistence, and graduation rates), then the efforts and commitments are futile. Or, if students indicate a high level of engagement, but this high level does not translate into improved academic performance, or increased retention and graduation rates, change for change's sake is counterproductive. This potential exists if data is collected without an intentional effort to target this population.

Student engagement and institutional effectiveness. Educators have also evaluated their institutional effectiveness in conjunction with student engagement results. Scholarly researchers have developed models and conducted thorough research efforts in order to provide effective solutions. A recent study analyzed institutional effectiveness for 28 accredited community colleges located in the southern United States using a survey instrument containing the guidelines and criteria specified by the Southern Association of Colleges and Schools. Its purpose was to prove the importance of institutional effectiveness in the accreditation process. They found that community college leaders ranked institutional purpose or educational goals as their primary focus, with program evaluation and institutional research as close seconds, and organizational involvement as third (Todd & Baker, 1998).

Student engagement and student success. Student engagement has been associated with student achievement and graduation rates, true measures of the overall student success rates. In a recent study conducted at the Guilford Technical Community College in North Carolina, researchers used 1,809 general student surveys and graduate exit surveys, conducted face-to-face interviews, and utilized existing college data from the 2001-2002 academic school year to analyze the effects of campus involvement on student achievement and graduation. They identified seven demographic variables that were identified as placing students at high risk of not graduating. These were delayed entry, part-time enrollment, working full-time, financial independence, having dependent children or others, being a single parent, and not earning a high school diploma. Additionally, they found that community college students were least likely to speak with a faculty member outside of the classroom when compared to four-year university students, 69% versus 85% respectively. These students were less likely to participate in

study groups, 46% versus 77%; and they were least likely to participate in school clubs, 18% versus 49% (Schmid & Abell, 2003).

Student engagement and faculty interaction. Research supports a positive correlation between faculty interaction and student engagement levels (Astin, 1993; Carlan, 2001; Chang, 2005; Chickering & Gamson, 1987; Kuh, 2001a; Swigart & Murrell, 2001; Wyman, 1997). To some degree, the lack of faculty-student interaction can be attributed to the large percent of community college faculty members who are part-time adjuncts. These instructors are not required to keep office hours although they are encouraged to be available to students after class. Their personal schedules can drive the need for them to leave campus immediately following their classes to make it to another class location. Faculty-student interaction has been indicated as a contributing variable for academic development and success and has been particularly identified as having a positive correlation with academic achievement, especially among minority students (Walker & Plata, 2000).

Student engagement and technology. The college process is inundated with current technologies. In today's technical environment, it is not unusual for colleges to make initial contact with students via the Internet or through social media (Phillips, 2007). Student engagement has also been studied in connection with the student's choice of technology. Considering such forms of information technology as the internet, flash drives or social networks, results from these studies have been mixed. On the one hand, studies supported positive correlations between student engagement and the use of these technologies. On the other hand, increased usage did not necessarily equate to increases in student engagement.

For example, researchers (Laird and Kuh, 2005) reported an increase use of the internet of 8% in 1994 to 44% in 1998 among college students in this 4-year period. The percent of courses using the internet also doubled in a 2-year period. In less than nine years, the percentage of college students using the internet increased to 99% (Student Monitor, 2003). It should be noted that using the Internet does not necessarily equate to higher levels of student engagement.

Student engagement and technical programs. Vocational and technical schools and institutes have also studied and substantiated the benefits of student engagement. One such study took place at The Restaurant School at Walnut Hill College in Philadelphia, Pennsylvania. To accommodate their nontraditional students' crowded schedules and yet provide opportunities for them to increase their engagement efforts, this school built a "Student Success Hour" into the middle of each academic day. Classes are not held during this time providing students with an opportunity to interface with campus personnel and fellow students and services, efforts designed to increase student engagement levels. They forged a blend between Students Affairs and Academic Affairs based on the data that suggested the importance of engagement.

They then worked together to find opportunities where students could spend time in the community and on the campus despite their busy schedules. Further, they used "engaged" students and others to encourage those who were not. "Students, faculty, and staff who find our programs useful can exert a positive influence on some of the more inactive students, helping us to overcome students' disinterest in co curricular events" (Mattingly & Shupp, 2004, p. 139). As a result of these efforts, when the same survey was administered two years later, engagement levels at the Restaurant School had increased over 30% (Mattingly & Shupp, 2004).

Student engagement and civic activities. Even an increase in civic activities has been positively associated with student engagement. In 2001, The International Association for the Evaluation of Educational Achievement conducted a study on the premise that the college campus could become "a more democratic environment" (p. 4). The researchers believed that engagement on campus could be improved by participation in civic activities. After surveying 90,000 students from 28 different nations, they established a connection between campus and classroom engagement and involvement in civic life.

Researchers concluded that "Schools that operate in a participatory democratic way, foster an open climate for discussion within the classroom and invite students to take part in shaping school life are effective in promoting both civic knowledge and engagement" (Hoffman, Perillo, Calizo, Hadfield, & Lee, 2005, p. 211). This study also made the distinction between simple participation and students being "intensely engaged" which they defined as engagement on several different levels (p. 213).

Student engagement and early childhood experiences. Including experiences from as far back as elementary and middle school, current student engagement at the college level has been evaluated in association with early childhood experiences. A 1999 study in Quebec, Canada examined the effects of the students' recall of early childhood educational experiences upon their current levels of engagement. Using a generalized version of the Motivated Strategies for Learning Questionnaire, they developed autobiographical narratives depicting those significant events. They then assessed current student motivation and engagement in learning. Based on what students recalled and the nature of those experiences (positive or negative or academic or

curricular), researchers drew conclusions based on a comparison of current engagement levels with the type, frequency, and extent of the memories.

These results were quite interesting. If a student was currently less engaged, the memories tended to be negative or non-academic ones. "The evidence suggests, therefore, that less confident, more anxious students will remember having had more negative and non-academic and curricular important experiences during school than will more confident, less anxious college students" (Karabenick, Brackney, Jeffrey, et.al, 1999, p. 111). Traditional and nontraditional students differ not only in what factors contribute to their success, but also in the motivators that drive them (Bye, Pushkar, & Conway, 2007). These may or may not be connected or resulting from an early childhood memory, but the effect can remain.

The results of one study discounted any notion of past experiences affecting current college academic performance. Swigart and Murrell (2001) concluded that what the student brings to the community college is not as important as what the student actually does once there. The executive summary for the 2005 Community College Survey of Student Engagement speculated as to what other factors could have influenced these results. Among their reasons were: 1. This is really a description of the magnitude of the need among these students. They require more services and faculty interaction just to overcome the many obstacles stacked against them. 2. They are most likely to be under- or un-prepared for college and need to employ all available services just to continue from one semester to the next; 3. The survey might reflect an inordinate number of responses from those students who really are engaged and on campus more than those who are less engaged, and may not have been on campus to participate. 4. High risk students may need to work harder than normal students just to keep pace.

Students who are academically prepared may not require the additional services to attain the same grades. Glenn and Diament (2005) cautioned all researchers against "lumping together members of minority groups in their studies of community college students because the dynamics of the two groups appear to be different" (p. 22).

Summary

By practically every standard, student engagement has been positively associated with nearly every aspect of the college experience for every major category of students. There should be no surprise that technical and workforce students can benefit from efforts to increase their engagement levels. There is not enough research that has segregated the results gained from surveying technical and workforce students in comparison with the general community college population. These two student populations are not the same, but are distinctively different in several ways. Student engagement has been measured and analyzed from a broad variety of perspectives and in comparison to many variables; however, the positive effects of engagement have been challenged by some studies.

Additionally, the absence in survey participation among this subset of students could also be a contributing factor in the differences in academic performance well documented in the literature between these two groups (Advincula-Carpenter, 1995; Andom, 2007; Azari, 1996; Bragg, 2000; Carlan, 2001). If the CATE students' needs are not identified, the services that could assist them in their educational experiences and goals and the times that they require such student services could be unknowingly excluded from community college improvements efforts. This would give an unfair advantage to the traditional student as such services are believed to improve academic and other student success factors. Without the necessary services, or at least the

opportunity to provide input to such, this group could be left to grapple with the demands of college, and their other significant stressors, without that well-intended help.

There are numerous factors to consider when measuring a student's level of engagement. As indicated in the literature, factors originate and impact engagement levels as early as childhood and continue through the student's current age and position in life. These factors vary from time to time and from student to student. The importance of the level of student engagement to many factors related to student success is supported throughout the literature; however, there were some studies that disagreed with this notion. There were a few studies that indicated that engagement was over-rated. In fact, they concluded that engagement was not related to academic achievement at all, especially among certain groups of students such as minorities, international students, and less-engaged community college adults (Evelyn, 2006; Marklain, 2007; Pekow, 2004; Parikh, 2008; Cobbs, 2008).

Having analyzed these studies in considerable detail, it is this researcher's opinion that the validity of these studies is in question. Many of them did not meet basic educational research criteria. One was a published article in USA Today, and seemed to be more of a commentary and not a peer-reviewed article. The other study did not publish enough about its methodology to make a sound decision about its validity. Comparatively, the studies that support the relationship between academic achievement and student engagement were more valid and out-numbered these objections four to one.

Clearly, the investments made to assess engagement at all levels have proven their worth. Colleges, universities and high schools that must invest considerably in time, resources and dollars to participate in these surveys do so with an expectation that the results will increase their overall effectiveness in educating and maintaining their

students. The research is consistent in its support of these assessments and the corresponding results made as a result of the findings. Projections for the future use of these instruments indicate that more schools and colleges will use them in the future and student engagement efforts will grow increasingly important as the demands and cost of education continue to rise.

The variables that influence student engagement range from a student's academic preparedness to early childhood experiences, college environments and family support structures. There are several college services that have impacted student engagement levels, as well as actions the student takes to meet the rigors of college-level academics. Everything from the number of books read to the amount of time spent with faculty can impact a student's level of engagement. Colleges recognize this relationship and continue to discover ways to increase student engagement levels.

To summarize, there are three critical components in this study: the community college, one of its sub populations, the Career and Technical Education student, and student engagement. A general understanding of the history and current trends for each of these will strengthen the comprehension of the study's purpose, processes, and conclusions and will assist in establishing the significance of the study and the potential contributions this study could make to the field of higher education.

Chapter Three: Methodology

Introduction

Chapter Two provided a review of practical and theoretical literature on the effects of student engagement on several aspects of community college life. These ranged from activities inside the classroom to those that are distant from the campus itself, but that have an impact upon a student's level of engagement. The student survey used to measure variables associated with the student's level of engagement is the Community College Survey of Student Engagement (CCSSE pronounce "ses-see"). Using a causal-comparative design and inferential statistics, the study will answer two research questions and tests two hypotheses related to the reported experiences of Career and Technical Education students when compared to the experiences of traditional, Academic majors.

The remaining portions of this chapter will identify the study's participants, the processes used in data collection, and provide a detailed description of the setting. It will also provide a comprehensive description of the instrument and its psychometric characteristics, including its reliability and validity. It will also contain a list of procedures, a description of the research design and the data analysis that will be used in the study.

Research Design

The study will use a causal-comparative design utilizing existing quantitative survey results in data analysis. It will compare the differences between the responses to 134 questions under five benchmark areas between CATE and Academic students (identified by their major fields of study). Corresponding student engagement levels from the five subscales of all 111 questions will be compared between the two groups of

students. This design was chosen because it is suitable for making comparisons between one or more groups, is appropriate for hypothesis testing, and is designed to measure differences between variables (Ary, Jacobs, Razavieh, & Sorenson, 2006).

It also allows for hypothesis testing when the researcher does not have the ability to manipulate any variables. It is best suited for studies involving ex post facto research when two groups share a known difference in a variable, the researcher can test for the impact of another dependent variable (Ary, Jacobs, Razavieh, & Sorenson, 2006). This study examines a number of different dependent variables.

In this study, the two groups are identified as being different in several respects and there are variables that are believed to affect each group differently, however, the extent of the difference and the impact upon student engagement levels remains unknown. This study will compare the responses from the two groups of students focusing on 111 questions from the five major benchmark areas with special emphasis on the Support for Learners and Student Effort benchmark areas since these are the areas with the highest allocations of improvement dollars each year (McClenney, 2007) and the ones for which colleges and students exercise the most influence upon.

Research Questions and Hypotheses

The study's research questions are as follows:

1. Is there a significant difference in the Community College Survey of Student Engagement data which measures the overall student engagement levels between Career and Technical Education and Academic students in the benchmark area of Active and Collaborative Learning as indicated by their responses to 13 Community College Survey of Student Engagement survey questions?

2. Is there a significant difference in the Community College Survey of Student Engagement data which measures the overall student engagement levels between Career and Technical Education and Academic students in the benchmark area of Student-Faculty Interaction as indicated by their responses to 19 Community College Survey of Student Engagement survey questions?

3. Is there a significant difference in the Community College Survey of Student Engagement data which measures student engagement levels between Career and Technical Education and Academic students in the benchmark area of Academic Challenge as indicated by their responses to 25 Community College Survey of Student Engagement survey questions?

4. Is there a significant difference in student engagement levels between Career and Technical Education and Academic students specifically regarding their college's Support for Learners as indicated by their responses to 29 Community College Survey of Student Engagement survey questions?

5. Is there a significant difference between Career and Technical Education and Academic students in their responses regarding levels of Student Effort as indicated by their responses to 30 Community College Survey of Student Engagement survey questions?

The null-hypotheses for the research questions are as follows:

$HO_{1.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Active and Collaborative Learning as indicated by their responses to 15 Community College Survey of Student Engagement survey questions.

$HO_{2.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Student-Faculty Interaction as indicated by their responses to 15 Community College Survey of Student Engagement survey questions.

$HO_{3.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Academic Challenge as indicated by their responses to 15 Community College Survey of Student Engagement survey questions.

$HO_{4.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Support for Learners as indicated by their responses to 29 Community College Survey of Student Engagement questions measuring specific areas of learning and the learning experience.

$HO_{5.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Student Effort as indicated by their responses to 30 Community College Survey of Student Engagement questions measuring specific areas of student behaviors and academic effort.

This causal-comparative study will utilize nonparametric statistics to examine the differences in responses between these two groups of students. Because the study will make assumptions regarding the nature of population parameters, nonparametric tests are appropriate. Using quantitative analysis techniques and statistics, it will compare CCSSE

results between Career and Technical Education students with those collected from Academic, traditional students during the same year.

In testing the hypothesis, the study will utilize the Mann-Whitney U test to determine whether there are significant differences between the means of the paired samples at the standard acceptable .05 probability level for the 111 research questions in the five benchmark areas. The Mann-Whitney U test is used to compare differences between two independent groups when the dependent variable is reported with interval or ratio data. It is a nonparametric or distribution-free alternative to the parametric two-sample t-test and does not rely on exact parameter estimations or precise distributions. These tests make less restrictive assumptions and are more sensitive to median scores (as opposed to means) and allow comparisons that are less affected by outliers (Howell, 2008). As such, it is an appropriate statistic for this study.

Participants

The sample population for this study consisted of all students enrolled at any one of the four participating community colleges in Texas. Actual participants are community college students enrolled during the Spring 2009 and 2011 terms. The combined student population is approximately 43,000 students. At the time of data collection, the average populations for the four colleges were 21,016; 4,074; 10,329; 7,662 respectively. The participants were taking the survey as part of the survey's standard selection criteria and not as a part of this study.

CCSSE uses a stratified sampling process that randomly selects credit courses that will participate in the survey for that year. The total number of required courses from which students are selected to participate is based on the college's total population and the sample size (estimated at 20% of the total student population) needed to reduce

sampling error. No separate sample size is calculated for this study based on this process. The total number of 1,363 records has been deemed adequate for this study.

Each college had both Academic and CATE students enrolled and both sets of students participated in the survey. Academic students are those with standard academic majors such as English, Science, History, Math, Chemistry, etc. Many of them desire to achieve bachelor's degrees and higher. Their degree plans are based on the academic requirements required by a 4-year university. CATE (Career and Technical Education) students are those enrolled in technical (formerly Workforce) programs. These range from Logistics and Transportation to Avionics and Automation. These students are seeking degrees or certifications to meet the demands of a specific career field in order to enter that career field upon completion or for advancement. A large number of the CATE students are not seeking 4-year degrees, but rather the minimum entry-level degree to make them more competitive in their current career field.

Setting

The study will take place at a community college district in Texas. This district is one of the four largest districts in Texas and includes five independent colleges. Four of these are participating in this study. The district offers over 325 degree and certificate programs and has a total student population of over 63,000 students. Of the 325 degrees, 42 are Associate of Arts; 21 are Associates of Science; 111 are Associates of Applied Science; and 168 are certificate programs (Alameda Community Colleges, 2010). The researcher was on staff as an adjunct instructor at one of the colleges and served as a Fulltime Lead Instructor in a technical program there for two years.

Each college is located in communities with a wide range of economic, education, and racial diversity levels. Student demographics indicate a wide range of student

capabilities and goals, as well as varied levels of educational backgrounds and outcomes. Student composition is reflective of the communities where these colleges are located. For example, one campus has nearly 70% of its population identified as Hispanic students and only 2% African-American. Another college has 27% African-American and 11% Hispanic students (Texas Higher Education Data, 2011). As mentioned in the community college history, these populations frequently choose community colleges over 4-year universities and CATE students are a large portion of these populations as well.

The study will include 111 questions containing numerous dependent variables related to student engagement levels from the five benchmark areas. The questions will range from how often a student uses a service to how many books they have read during the term. Appendix 1 contains the survey in its entirety.

Instrumentation

This study will use the Community College Student Report (CCSR), an instrument designed to measure student engagement at the community college level. Community colleges use the CCSR, the 146-item survey designed to measure student engagement in five major benchmark areas to gain information directly from their students in order to improve their levels of service. These are Support for Learners; Active and Collaborative Learning; Student Effort; Academic Challenge; and Student-Faculty Interaction (CCSSE, 2008; Marti, 2005; McClenney, 2007). By design, a student cannot tell which benchmark area the responses will go into. It is standard paper survey document and usually takes about 20 minutes to complete. Students are given time in class to complete and must return it during that same period.

This study will focus on responses from the five benchmark areas: Active and Collaborative Learning, Academic Challenge, Student-Faculty Interaction, Support for

Learners and Student Effort. The additional focus on Student Effort and Support for Learners were selected as they have the most defined college and individual relationship to student engagement levels and because these are the two areas that colleges and students exercise the most control over.

The survey questions are aligned in clusters by benchmark areas. The five benchmark areas on full survey are:

1. Active and Collaborative Learning measures the level of a student's participation in class and with fellow students. This set of seven questions asks students to identify how often they participate in certain activities

2. Student-Faculty Interaction is how often and how long a student interacts with a faculty member inside and outside of class.

3. Academic Challenge is how challenged a student is by the academic rigor in a course. This set of 10 questions asks students to identify how difficult a course was or how much effort it required of them.

4. Support for Learners is the amount of support that is available for learners as reported by them.

5. Student Effort is what the student actually does to promote his own learning. This set of eight questions asks students how often they do certain educational activities.

With such a varied collection of scales across benchmark areas, in order to publish national results that are standard from one school to the next, CCSSE data is rescaled so that all items are on a uniform scale of 0 to 5 during data analysis. These questions address a wide variety of dependent variables. For any one of these sets of questions, there could be numerous other dependent variables that could be either extraneous or confounding. These include the following:

1. Amount and timing of Instructor Feedback: The amount of time an instructor spends with a student while providing feedback of any sort or the number of times the instructor provides feedback during a course term. This includes emails, phone calls, office visits or any other forms of communication. Other confounding variables would be the amount of time the student and instructor have available during the term; the number of other students requiring feedback; the student's willingness to solicit the feedback; and the instructor's willingness to provide such feedback. Research is consistent in that the more time a student spends in direct contact with a faculty member, the higher the level of learning and engagement (Astin, 1993, McClenney, 2007, Phillips, 2007). This fact was found to be even more impacting with students of color (Chang, 2005).

2. Amount of Student Services Actually Used: This includes the amount of time spent in the student areas, tutoring and writing centers, career and personal student counseling, and group functions. Other confounding variables would be the operating hours for these services, the quality and effectiveness of the instruction and the amount of available meeting time each person has during the term. A positive relationship persists throughout previous research that supports the significance of student services to overall student success and increased levels of engagement (Akiba & Atkins, 2010; Astin, 1984; Benshoff, 1991; Borglum & Kubala, 2000; Bundy, 2004).

3. Amount of Time Spent in Academic Advising: This includes the amount of time spent with academic advisors and the frequency of those visits during one term. Confounding variables would be the operation hours for these services, the process to gain the services (by appointment or walk-ins), and the availability of academic counselors skilled in CATE degree plans and programs, and whether advising is at will or

mandatory. Research supports a positive correlation between the amount of time students spend in academic advising, as well as the frequency of such with student success indicators (Bryant, 2001; Castillo, 2007; Clark, 2005).

4. The Frequency of Use of Academic Support Services: This includes the amount of times a student uses academic support services (library, online tutorials and assistance, mentors, and department faculty assistance). Any amount of time invested on the college campus or in the environment is believed to contribute to an increase in learning and engagement (Chickering & Gamson, 1987; McClenney, 2007, Marti, 2005; Evelyn, 2004; Hart, 2003).

In the college-level administration of the survey, by the employment of the stratified random selection of credit courses accomplished by each participating college in this study, the sample size is not calculated for each one; however, the selection process is assumed to result in an adequate sample size for each school. As a standard, sample sizes are based on a percentage of the total student population and range in sizes from 600 to 1,200 students. Participating schools with less than 1,500 students have a target sample size of approximately 20% (CCSSE, 2011). For this study, the total number of 1,363 records is assumed to be representative of the college as a whole.

The instrument's reliability and validity are acceptable. A recent revalidation study examined these characteristics using three years of CCSSE data from 512 participating colleges and 275,000 students across the country. Examining nine latent constructs, CCSSE researchers used the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Residual (SRMR) in a two-index strategy, researchers divided the population into three subgroups: all participants for the three years; males and females; full- and part-time students. Different tests were accomplished

to measure variances and no differences were found across groups. The results of the Cronbach's alpha values supported a strong consistency in the construct being measured. Test-retest reliability and validation analyses focused on GPA were also supported by the results.

Specifically, test-retest results by benchmark area results were as follows: Active and Collaborative Learning (.73); Student effort (.74); Academic Challenge (.77); Student-Faculty Interaction (.73) and Support for Learners (.73). Conversely, the alpha scores were lower. By benchmark area, these were: Active and Collaborative Learning (.66); Student Effort (.56); Academic Challenge (.80); Student-Faculty Interaction (.67) and Support for Learners (.76) (Marti, 2007). The differences between these results could be the fact that for the test/retest, over the three year period, only 528 records (out of 275,000 total) had the exact identification numbers and were included in these calculations.

Despite these low numbers, researchers concluded that, "Reliability and validity analyses provide supporting evidence that the CCSR is effectively measuring student engagement" (Marti, 2007, p. 14).

In addition to the numerous validation studies that have been conducted since its inception, its psychometrics are overseen and routinely evaluated by a board of survey research experts (CCSSE's Technical Advisory Panel). Because of its reliable results, this instrument continues to be the most popular measuring tool for student engagement (McClenney, 2009). The survey instrument has been administered over the last nine years through CCSSE and its parent survey, NSSE, since 1999. The college district is an active member and as such, has approval to use and administer the survey.

As a standard practice, CCSSE managers evaluate the instrument using 3-year cohort in its national results. This process allows data to consist of three years from all participating colleges and increases the number of participants included in the national results. It also minimizes statewide consortia for any given year (CCSSE, 2008). It was adapted from the NSSE and is over 70% compatible with this instrument that has been in use at 4-year universities since 1999. Researchers evaluated every property to determine its psychometric strength. Alpha levels were reported between .59 and .80 on latent constructs of Information Technology and Academic Challenge respectively. Institutional level coefficients were in the range of -1.38 for Academic Preparation to .088 for Faculty Interactions. Test-retest levels for all constructs were above .60. The overall reliability is .72 (Marti, 2007).

Using Cronbach's alpha, benchmark scales were deemed reliable as the RMSEA of .066 fell within the range for an *adequate* fit, while the SRMR of .066 was in the range for a *good* fit (Kuh, 2002; Marti, 2011). In their article, *Celebrating the Past, Creating the Future: 50 Years of Community College Research*, the National Center for Higher Education Management Systems records NSSE/CCSSE reliability at/above the standard .70 (Floyd, Haley, Eddy & Antczak, 2009). A team of independent researchers concluded that, "Psychometric properties of the instrument have been explored extensively and have demonstrated that the instrument is reliable and valid" (Marti, 2009, p.21).

While these ratings alone are not impressive, CCSSE is highly comparable with the National Survey of Student Engagement from which it derived. NSSE managers conducted the NSSE Psychometric Reliability Framework study with over 965,000 respondents' data to test the reliability of the instrument. Using Cronbach's alpha

measures, NSSE scales fell within .699 to .856 range. On item-to-item correlations, they ranged from .327 to .576. Overall reliability for the NSSE instrument is .84 (NSSE, 2012).

Procedures

To accomplish the study, researchers will use data from the Community College Survey of Student Engagement, (CCSSE). Procedures for the study started with a collection of all data files provided from the participating colleges. While the data is generally the same, each college prepares its own code sheets to identify what its variables are and how the script used to administer the survey explained these to the students. Consequently, slight variations existed in the data. These were highlighted and rescaled or renamed in SPSS to ensure consistent results.

The selection process started with a master list of course offerings for the semester in which the survey will be administered (normally done during the spring semester). This formula organizes classes into clusters and stratifies them according to three timeframes based on the scheduled start times for each class. Level One identifies classes that start at 11:59 a.m. and earlier. Level Two includes classes that start from 12:00 p.m. until 4:59 p.m. Level Three includes classes that start from 5:00 p.m. until 12:00 a.m. CCSSE managers identify which classes the survey will be conducted in based on this formula.

To avoid selecting the same classes from one year to the next, the process uses historical administration data to select specific class sections. For example, if English 201 was selected in the previous year, the formula would select a different section or different course. With hundreds of course sections to choose from, the process will not allow a particular section to be chosen more than once in a 5-year period. The selection

of participating classes is done by CCSSE managers, not the colleges administering the survey.

Participating schools generally administer the survey once a year using a standardized prescribed stratified random cluster sample scheme designed to include a cross-section of the student body and to ensure confidence in generalizing the data for their students, as well as data on students from other participating community colleges. With each participating school utilizing the same formula, schools could compare their responses to those of schools of similar size and demographics. Because the selection of participating classes is done prior to administration and does not segregate technical and academic classes, either type has an equal chance of being selected for survey participation; however, fulltime students have the greater potential for inclusion.

Four factors in this process make it difficult for the CATE students to be equally represented in the results. 1) Generally there are more course offerings during the day and CATE students attend primarily at night as most work during the day. Course offerings at one of the three colleges that will be included in this study paint a clear picture of this notion. In three of their largest courses of study (English, Biology, and Math), English offered day and evening courses at a 5:1 ratio; Biology at a 19:1 ratio; and Math 6:1 ratio. As a result, for every five, 19, or six classes respectively, offered in the day, there was one course offering for that same class in the evening (Community College Fall Schedule, 2008). While survey administrators make the effort to reach these students, the numbers alone reflect the difficulty for them to do so. These two facts reduce the CATE students' chances for inclusion in the survey.

A large majority of CATE students transfer in credits from previous college work and work experience that meet the requirements for many of their general education

requirements where the larger-sized classes are standard. Consequently, CATE students are not in the general education classes at the same level as the traditional students are, reducing their chances again for participation.

The last two factors relate to their status as Career and Education Training students. Most CATE students are also part-time students (IPEDS, 2009). Part-time students do not have as many chances to be surveyed as they attend fewer classes than do full-time students. CCSSE national results are adjusted or bundled to allow for this disparity, but local level results are not.

Additionally, as CATE students progress through their academic program, classes that are specific to their technical fields are also smaller in size and number. This disparity increases as they get closer to graduation and after general education requirements are met. For example, a 60-hour associate's degree has 30 hours specific to the technical career field. These technical courses are required only for students who have majored in the technical area. While community colleges have attempted to get students who are not technical majors to use these courses as electives, these attempts have not been successful. The majority of students in these technical courses are technical experts. Some of these courses may only have one course offering per year. If that offering does not occur during the term when CCSSE is administered, the CATE students lose another opportunity to participate in the survey's administration.

Data Analysis.

Once an IRB approval was secured, the data was requested from five colleges through their Institutional Research Departments using the procedures on their websites. The requests asked that they provide electronic spreadsheet files of raw survey results, removing any personal identifiers. Four of the five colleges provided data files.

Data lists and code sheets were then loaded into Microsoft Excel files and coded for identification in SPSS. Survey responses from the 134 questions in the five areas of interest were extracted from the data sheets, coded for consistency according to the variable name, and loaded into SPSS for analysis. The results from the 1,363 records were re-scaled and coded with abbreviated letters and then loaded into SPSS with numerical record identifiers and codes appropriate for SPSS analysis.

For the majority of the variables, data coding and numerical scales will match the ones on the code sheet. When this is not feasible, (i.e. a college uses the same coding for different questions), optional alternatives were identified. The survey results were organized in numerical order by record number with no personal identifiers loaded into the individual records. Consequently, the record number 001 does not mean that it is the first student, but rather the results taken from a particular survey has been loaded in under record number 001. These record identifiers will coincide with the total number of surveys included in the study and will serve as the specific identifiers for a student record. This will allow for SPSS statistical testing of data without personal identifiers. Participants will not be identified using any personal identifiers as survey results do not contain any personal identifiers. CCSSE code sheets allow the researcher to determine which college and major a student has so that comparisons can be made on the basis of these two variables alone without personal identifiers.

Records containing missing data in these five benchmark areas were not used in the study. CATE and Academic students were identified by majors and then divided into either group "A" for Academic (Number 1 in SPSS) and group "C" for CATE (Number 2 in SPSS).

Once the data was organized by groups, using nonparametric statistics and quantitative analysis techniques, the researcher ran the appropriate statistical tests in SPSS. Output data was analyzed looking for the differences between these two groups of students. Using SPSS for each of the 134 questions related to the five benchmark areas in the study, the researcher performed the Mann-Whitney U test to determine whether there were significant differences between the medians of the paired samples for each subscale at the acceptable .05 probability level (Pallant, 2005; Howell, 2008).

While there were no personal identifiers, there were 12 demographical items that were included such as age, GPA, marital status, race, etc. and these will be analyzed only in relationship to student engagement as they impact results.

CHAPTER FOUR: FINDINGS

The purpose of this study was to compare student engagement levels between Academic and Career and Technical Education students based on responses in five benchmark areas on the Community College Survey of Student Engagement (CCSSE). If the results reflected a statistically significant difference between the two student groups, community colleges could use this data to improve student services and their efforts to include more Career and Technical Education students in survey administrations. Ultimately, the results could assist colleges with limited funding to expend those dollars in the most effective services.

In order to make appropriate comparisons between the two groups, this chapter provides data analyses ranging from student and college activities to student behavior and performance. The overall student engagement level is composed of a combination of the survey results from the all five benchmark areas. To calculate the results, the study analyzed data from the students' responses to a series of questions specifically related to these areas.

In addition to the general demographics, this chapter will provide a summary of the statistics from all five benchmark areas.

Demographics

In this section, results will be reported for the following demographics: age, gender, primary language used in the home, marital status; race; and student status (GPA, major, academic goal, highest academic credential, enrollment status, time attending classes, and total credit hours). These variables are included because the current research supports a direct relationship between these variables and student engagement

(Bulakowski, Jumisko, & Weissman, 1998; Adelman, 2005; Alfred, 2009; Andom, 2007; Astin, 1984; Bailey, Jenkins, & Leinbach, 2005; Bauman, Wang, DeLeon, & Kafentzis, 2004; Bennett, Stadt, & Karmos, 1997; and Bishop-Clark & Lynch, 1992; and Boss, 1999). They will be used to make comparisons between the groups only from the standpoint of the variable's potential impact upon student engagement levels. Additionally, some of the variables will be directly related to demographics (i.e. how often students interacted with students from different economic, social and racial and ethnic backgrounds).

The average age reported for Academic students was between 18 and 21, while the average age for the CATE students was between 22 and 29. (See Table 1).

Table 1
Age Range of Participating Students

Age Range	Academic	CATE	Total
18-19	279	42	321
20-21	278	57	335
22-24	136	37	173
25-29	111	15	126
30-39	112	11	123
40-49	45	12	57
50-64	7	14	21
65+	2	11	13
Total	970	199	1169

There were 960 responses to the question of gender for Academic students: 410 (42.7%) were males and 550 (57.3%) females. There were 177 responses for CATE students: 88 (49.7%) males and 89 (50.2%) females. Missing data was recorded for 96 CATE records.

When students were asked whether English was their first language, (1=Yes; 2= No), 816 of 961 (83.5%) of the Academic students responded yes; 155 of 961 (16.1%) responded no. For the CATE students, 146 of 180 (81.1%) of CATE students responded yes, while 32 of 180 (17.8%) responded no.

For marital status, students were asked to answer a yes/no question (1= Yes; 2= No) for whether they were married. Of the 1,054 Academic students who responded to this question, 683 (64.8%) said yes and 471 (44.7%) answered no. For CATE students, of 221 responses, 13 said yes (5.9%) and 208 said no (94.1%).

For the racial composition of each group, students could choose from seven selections. The race represented the most for both types of students was Hispanic, Latino, Spanish and White was the second highest (See Table 2).

Table 2
Racial Identification

Racial Identification	Academic	CATE	Total
American Indian	10	0	10
Asian/Asian American	16	12	28
Native Hawaiian	2	2	4
African-American	46	20	66
White/Non-Hispanic	248	63	311
Hispanic/Latino/Spanish	611	183	794
Other	34	7	41
Total	967	287	1,254

To determine the student's status, seven variables were included: the GPA, major, academic goals, highest academic credential, enrollment status, time attending school (day or evening) and total credit hours.

For the GPA, students could choose any of eight choices between A-C minus or lower, pass/fail classes only or that they do not have a GPA at this school. For this data

point, of the 1,198 students who responded to this question, 973 were Academic students and 225 were CATE students. Missing data was reported in 165 records.

Comparing the reported GPAs, for Academic students, 943 of 973 (96.9%) reported GPAs of C or better. For CATE students, 213 out of 225 (94.6%) reported GPAs of C or better. See Table 3 for the specific breakdown.

Table 3
Grade Point Average (GPA) Range

GPA Range	Academic	CATE	Total
A	3	2	5
A- to B+	13	2	15
B	14	8	22
B- to C+	30	35	65
C	182	47	229
C- or lower	327	67	294
No GPA at this school	220	46	366
Pass/Fail Classes Only	184	18	202
Total	973	225	1,198

According to the CCSSE codebooks for all four participating colleges, there were 31 selections to identify a student's major. Academic students responded in 24 majors, while CATE students responded in seven majors. The highest concentration of Academic students was found in Education (173), Allied Health Professions and Related Sciences (136), and Biological Sciences/Life Sciences (69). The highest concentration of CATE students was found in Business Management and Administrative Services (148) and Precision Production Trades (drafting graphics, precious metal worker, etc. (22). See Table 4 below.

Use the following key to interpret academic majors:

1-Agriculture

2- Allied Health Professions and Related Sciences (nursing, physical therapy, dental, etc.)

3- Agriculture and Related Programs

4- Biological Sciences/Life Sciences

5- Business Management and Administrative Services

6- Communications (advertising, journalism, television/radio, etc.)

7- Computer and Information Systems

8- Conservation and Renewable Natural Science

9- Construction Trades (masonry, carpentry, plumbing and pipe fitters, etc.)

10- Education

11- Engineering Technologies/Technicians

12- English Language and Literature

13- Foreign Languages and Literature

14- History

15- Law and Legal Studies

16- Liberal Arts and Sciences, General Studies and Humanities

17- Mathematics

18- Technicians and Repairers (A/C, heating and refrig, auto body, electrical/electronics)

19- Multi/Interdisciplinary Studies (international relations, ecology, environmental)

20- Parks, Recreation and Leisure and Fitness Studies

21- Personal and Miscellaneous Services (gaming and sports, cosmetic, culinary)

22- Physical sciences (astronomy, chemistry, geology, physics, etc.)

23- Precision Production Trades 9drafting, graphic, precious metal worker, etc.)

24- Protective services (criminal justice and corrections, fire protection, etc.)

25- Psychology

26- Public Administration and Services (public policy, social work, etc.)

27- Science technologies (biological technology, nuclear and industrial radiological tech)

28- Social Sciences and History (anthropology, archeology, economics, geography, etc.)

29- Transportation and Materials Moving Workers

30- Visual and Performing Arts (art, music, theater, dance, etc.)

31- Vocational Home Economics (child care/guidance worker, clothing and textiles)

32- University transfer

33- Undecided

34- Other

35- Not applicable

Table 4
College Majors

Major	Academic	CATE	Total
Agriculture	6	0	6
Allied Health/Nursing	136	0	136
Biological Sciences	69	0	69
Business Management	0	148	148
Computer/Info Systems	39	0	39
Conservation/Nat'l Science	59	0	59
Education	173	0	173
Engineering Technologies	51	0	51
English Language/Literature	15	0	15
History	18	0	18
Law and Legal Studies	29	0	29
Liberal Arts/Sciences	41	0	41
Mathematics	11	0	11
Technicians and Repairers	0	7	7
Multi/Interdisciplinary Studies	0	6	6
Park, Recreation/Fitness	0	8	8
Physical Sciences	40	0	40
Precision Production Trades	0	22	22
Protective Services (CJ/FP)	0	21	21
Psychology	41	0	41
Public Administration/Services	14	0	14
Science Technologies	13	0	13
Social Sciences/History	9	0	9
Transportation/Mat'ls Movers	0	2	2
Visual and Performing Arts	9	0	9
Vocational Home Economics	2	31	33
University transfer	42	33	75
Undecided	51	0	51
Other	111	0	111
Not Applicable	13	0	13
Total	973	273	1246

The student's highest academic credential question had six choices ranging from none to a master's degree. For Academic students, 824 of 964 (85.4%) of students reported a high school diploma and 42 of 964 (4.3%) reported an associate degree. For the CATE students, 151 of 178 (84.8%) reported a high school diploma as their highest academic credential, while 7 of 178 (8.9%) reported an associate degree. Both groups of students reported in all six categories. (See Table 5).

Table 5
Highest Academic Credential

Highest Academic Credential	Academic	CATE	Total
None	5	2	3
High School Diploma/GED	824	151	337
Voc-Tech Certificate	80	16	34
Associate's Degree	42	7	13
Bachelor's degree	9	1	3
Masters+	2	1	1
Total	964	178	1,142

To determine a student's primary time attending classes, this question had three responses: 1= day (morning or afternoon); 2= evenings; or 3= Saturdays. For Academic students, of the 960 that responded to this question, 727 (75.7%) of them attended classes during the day, 224 (23.33%) attended during the evenings, and nine (.96%) attended on Saturdays. For CATE students, of the 181 responses, 140 (77.3%) attended day classes, 38 (20.9%) attended evening classes, and one (.55%) attended on Saturday.

A student's academic goal could range from self-improvement to the attainment of a 4-year degree. Students were asked to indicate whether the following items were reasons or goals for attending this college. The following scale was used for this question: 1= Not a goal; 2= Secondary goal; and 3= Primary goal. The goals were to:

(a) Complete a certificate program; (b) Obtain an associate degree; (c) Transfer to a 4-year college or university; (d) Obtain or update job-related skills; (e) Self-improvement/personal enjoyment; and (f) Change careers.

When responding to this question, the largest percentage of Academic students (67.2%) indicated that their goal was a 4-year degree; however CATE students selected the 4-year degree only 11.2% of the time. Instead the CATE students' largest percentage (52%) was for a certificate or an associate degree.

Students were asked to classify themselves as either (1) full-time or (2) less than full-time. For Academic students, 977 of 1,080 responses (74.0%) classified themselves as full-time while 283 Academic students did not answer this question. For the CATE students, 180 of 187 or (96.3%) classified themselves as full-time, while 86 did not answer this question.

A student's total credit hours could range from zero to over 60 credits through six choices: 0= None; 1= 1-14 credits; 2= 15-29 credits; 3= 30-44 credits; 4= 45-60- credits; 5= over 60 credits. The question specifically focused on credit hours earned at the current college and did not include any transfer credits or the credits in which the student is currently enrolled. For Academic students, 101 of 974 (10.4%) reported none, while the largest percentage (342 of 974 or 38.2%) reported 1-14 credit hours. There were 58 students (6.0%) who reported more than 60 credit hours. For CATE students, 20 of 178 (11.2%) reported none, while the largest percentages (49 of 178 or 27.6%) reported between 1 and 29 credits. There were nine (5.0%) of CATE students who reported more than 60 credit hours. See Table 6.

Table 6
Total Credit Hours

Total Credit Hours	None	1-14	15-29	30-44	45-60	60+	Total
Academic	101	342	208	148	117	58	974
CATE	20	49	49	27	24	9	178
Total	121	391	257	175	141	67	1152

The demographic numbers reported in this section provide an overall picture of the composition of the two groups. These are provided solely for comparative purposes as they relate to student engagement levels and specific questions related directly to demographics. They will not be the basis of the comparisons, but will provide an additional view of the data and their potential impact upon student engagement levels. Additionally, some of the variables will be directly related to demographics.

The remainder of this chapter will report survey results from the Mann-Whitney U tests run by SPSS according to each benchmark area and the related null hypothesis focusing on the probability $p < .05$. The order will be the same as that found in Chapter One: Active and Collaborative Learning; Student-Faculty- Interaction; Academic Challenge; Support for Learners; and Student Effort. Mann-Whitney U tests were conducted to compare student engagement levels in each of the benchmark areas.

Active and Collaborative Learning

Research Question 1. Is there a significant difference in the Community College Survey of Student Engagement data which measures the overall student engagement levels between Career and Technical Education and Academic students in the benchmark area of Active and Collaborative Learning as indicated by their responses to 13 Community College Survey of Student Engagement survey questions?

$HO_{1.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between

Career and Technical Education and Academic students in the benchmark area of Active and Collaborative Learning as indicated by their responses to 22 Community College Survey of Student Engagement survey questions. The results of the Man-Whitney U test are reflected in Table 7.

Table 7
Mann-Whitney U test (Active and Collaborative Learning)

Group	n	Mann-Whitney U	Mean Rank	Z	p=
Academic	1,061	657585.020	586.64	-1.189	.441
CATE	174		568.83		

Student-Faculty Interaction

Research Question 2. Is there a significant difference in the Community College Survey of Student Engagement data which measures the overall student engagement levels between Career and Technical Education and Academic students in the benchmark area of Student-Faculty Interaction as indicated by their responses to 19 Community College Survey of Student Engagement survey questions?

$HO_{2.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Student-Faculty Interaction as indicated by their responses to 15 Community College Survey of Student Engagement survey questions. Results of the Mann-Whitney U test are reflected in Table 8

Table 8
Mann-Whitney U test (Student-Faculty Interaction)

Group	n	Mann-Whitney U	Mean Rank	Z	p=
Academic	1,062	671458.021	584.58	-1.327	.572
CATE	163		578.91		

Academic Challenge

Research Question 3. Is there a significant difference in the Community College Survey of Student Engagement data which measures student engagement levels between Career and Technical Education and Academic students in the benchmark area of Academic Challenge as indicated by their responses to 25 Community College Survey of Student Engagement survey questions?

$HO_{3.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Academic Challenge as indicated by their responses to 15 Community College Survey of Student Engagement survey questions. The results of the Mann-Whitney U test are reflected in Table 9.

Table 9
Mann-Whitney U test (Academic Challenge)

Group	n	Mann-Whitney U	Mean Rank	Z	p=
Academic	998	1324351.107	539.64	-.987	.337
CATE	161		538.17		

Support for Learners

Research Question 4. Is there a significant difference in student engagement levels between Career and Technical Education and Academic students specifically

regarding their college's Support for Learners as indicated by their responses to 29 Community College Survey of Student Engagement survey questions?

$HO_{4.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Support for Learners as indicated by their responses to 29 Community College Survey of Student Engagement questions measuring specific areas of learning and the learning experience. The results of the Mann-Whitney U test are reflected in Table 10.

Table 10
Mann-Whitney U test (Support for Learners)

Group	n	Mann-Whitney U	Mean Rank	Z	p=
Academic	1,012	1852435.651	590.73	-1.475	.451
CATE	169		613.06		

Student Effort

Research Question 5. Is there a significant difference between Career and Technical Education and Academic students in their responses regarding levels of Student Effort as indicated by their responses to 30 Community College Survey of Student Engagement survey questions?

$HO_{5.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Student Effort as indicated by their responses to 30 Community College Survey of Student Engagement questions measuring specific areas of student behaviors and academic effort. The results of the Mann-Whitney U test are reflected in Table 11.

Table 11
Mann-Whitney U test (Student Effort)

Group	n	Mann-Whitney U	Mean Rank	Z	p=
Academic	1,056		618.57		
		1849571.071		-1.233	.217
CATE	177		616.11		

CHAPTER FIVE: CONCLUSIONS, DISCUSSION, AND SUGGESTIONS FOR FURTHER RESEARCH

Summary of the Findings

Data collection for this study included student engagement surveys from two administrations of the Community College Survey of Student Engagement (CCSSE) in Spring 2009 and 2011 for a total of 1,363 surveys. Four of the five district colleges provided survey results. All data was divided in SPSS by student type: Type 1 for Academic or Type 2 for Career and Technical Education. The student type was determined by the student's choice of 31 academic majors.

Overall, there were majors declared for 975 records (71.5%) for Academic students and 273 records (20%) from CATE students for a total of 1,248; 115 records (8.4%) either did not report an academic major or selected undecided, other, or non applicable responses. These records were not classified and therefore not included in the overall total number of records shown above.

During the administration of the survey, students could elect not to answer any one of the questions throughout the survey. As a result, missing data was recorded for all of the questions. Records containing missing data were eliminated from the final analyses. Because of this variation, the number of total records used in data analysis for each benchmark area will also vary. For example, if students did not answer the question regarding their academic major, they were not classified into either group since the academic major determined into which group a student's record was counted, but those students answered other questions on the survey. This makes the total number of records slightly different for each benchmark area. This difference varies from 40-73 records per area (less than 6% of the total), and is not significant enough to affect results.

Data from both years was consolidated for analysis. While it is possible to view the data by year, because this study is interested in the overall results for each benchmark area, it was more feasible to consolidate the results. Additionally, there were no changes in the survey instrument between the years. As a result, students who took the survey in either year utilized the same survey instrument.

In a visual comparison of the data by year, there were no notable differences in the responses or data calculation results. Data has been stored in three separate files: one for each year and one consolidated file. All data points presented in this chapter will include consolidated data from the 2009 and 2011student groups.

In the remainder of this chapter, we will take a closer look at the study's demographics, and the results from the five benchmark areas: Active and Collaborative Learning, Student-Faculty Interaction, Academic Challenge, Support for Learners, and Student Effort. In the final portion of this section, we will focus more particularly on the slight differences found in the subscales in the two benchmark areas of Student Effort and Support for Learners.

Demographics

For the most part, the demographics reported in this study were consistent with community college trends recorded throughout the literature review. The CATE students were slightly older than the Academic students (22-29 versus 18-21). There were more females than males in both groups (42.7% males/57.3% females), a trend that has held steady since the early 90's. English was the primary language for 80% of students from both groups. Over 80% of all students had earned a high school diploma or GED (a requirement for entry into the community colleges). For both groups, Hispanics composed over 60% of the population. As expected, CATE students selected an

associate degree or certificate as their educational goal (84.8%) and Academic students selected the 4-year degree as their goal (85.4%). Both sets of students indicated that they attend classes primarily during the day (75.7% for Academic students and 77.3% for CATE students). While it would have also been expected that CATE students would select evening courses at a higher percentage than the reported 20.9%, the requirement and availability for regular education courses offered more often during the day is probably driving this figure. Additionally, the low representation of CATE students in the study overall, and specifically from the more popular CATE programs, may have influenced this result as well. Some CATE students attend school at both times.

There were some noticeable demographic differences between the two groups and a few that were not consistent with current community college trends. First, the reported GPAs between the groups for grades of C or better were 96.9% for Academic students and 94.6% for CATE students. This may be overstated. Historically, Academic and traditional students tend to have higher GPAs than CATE and nontraditional students. This result may be the product of the self-reported data. GPAs were not checked against official school records, but only reported according to the student's knowledge.

Another area where the differences are notable is marital status. In this question, students were asked a yes/no question about whether they were married. For the Academic student, 64.8% said yes and 44.7% said no. For the CATE student only 5.9% said yes and 94.1% said no. Historically, and throughout the literature, the older students have a higher marital rate. This result may have been caused by the way the question was worded. If a student was in between marriages, engaged to be married, but not officially divorced, or if a student is technically married, but not living with the spouse, it will be difficult to answer simply yes/no. Regardless, the result is inconsistent with more

comprehensive demographics on community college adult students and causes some concern with the questions.

Enrollment status data was also not consistent with general community college trends. The CATE student reported fulltime status 96.3% of the time while Academic students reported fulltime status 74% of the time. The reverse is true in general community college populations. Because this question left practically no room for misinterpretation, there may have been other factors influencing these results.

First, the CATE student is grossly under-represented in this study in both numbers participating and questions answered. For example, one college had over 21 CATE programs available during the two terms when these survey results were gathered; however, only seven CATE programs had participants in this study with the largest majority (54.2%) coming from the Business Management program. Some CATE instructors from the more traditional CATE programs (Logistics, Truck Driving, Office Assistants, Heating and Air Conditioning, etc.) would argue that Business programs are not traditional vocational/technical programs. In fact, even within the five colleges in the Alameda District, the Business program is assigned to different departments. Regardless, with over 50% of the CATE responses coming from one area, the possibility for skewed results exists. The results may have been dramatically different had the CATE student been equally represented in the study.

Lastly, the number of part-time students appears to be over-stated, particularly among the CATE population. Negative trends in the domestic economic may have forced some students to become part-time students in order to work more hours and reduce the cost of going to school. Additionally, recent changes in financial aid have impacted the number of students who qualify, as well as the amount of aid they receive.

The combination of job losses or salary cuts and the decline in available aid may have forced students to drop down to part-time. With this large percentage of part-time students, a lower student engagement rate is expected. Research supports the fact that part-time students have lower student engagement levels than fulltime students (McClenney, 2007). This may have been a factor in the student engagement overall results as well.

An area where this difference is more profound is in identifying the student's major. There were 35 available choices. Eliminating the bottom four (University Transfer, Undecided, Other and Not Applicable), there 31 areas available to both Academic and CATE students. Academic students reported in 24 majors; CATE students reported in seven majors. The reason why this is a significant difference is that each of the participating schools has far more CATE programs than were represented in this study. For the District's largest college that houses the largest CATE population, there are 21 programs available to these students. At the smallest college, there were 11 programs. Obviously, there is a set of CATE students whose major is not included in the study or the data files provided from the colleges. This group of students' data could differ considerably, but is not visible through this process. This may be the missing puzzle piece, and a contributor to the unexpected conclusions and results of this study.

Active and Collaborative Learning

HO_1. There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Active and Collaborative Learning as indicated by their responses to 22 Community College Survey of Student Engagement survey questions.

The original hypotheses for the Active and Collaborative Learning benchmark area indicated that there would be a statistically significant difference between these two groups; however, this was not the case. The Mann-Whitney U-tests were conducted to compare responses between Academic and CATE students in areas pertaining to the academic learning processes they had used during the past year. With a significance level of .45 and Z value of -1.48 (rounded up), the results do not support the original hypothesis and the responses to the research question (that asked whether there was a significant difference between the two group's responses) are negative.

This benchmark area asked students about how often they had used their mental activities (memorizing facts, analyzing ideas, synthesizing information, making judgments, applying theories, etc.) to meet academically challenging tasks. It called for higher order thinking and processes in order to meet the academic challenges. The literature is consistent in the fact that Academic students out-perform CATE students academically particularly in the more challenging subjects of math, English, and science (Benshoff, 1993; Bishop-Clark & Lynch, 1992; Castillo, 2007; Cobbs, 2008; McClenney, 2007). The CATE student tends to be the more hands-on student who learned by doing or through formal training. They may not necessarily view their learning processes in terms of cognitive or mental processes. This is why a difference in results was expected in this benchmark area. It may be this difference in thinking that contributed to these results.

Student-Faculty Interaction

HO_2. There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of

Student-Faculty Interaction as indicated by their responses to 15 Community College Survey of Student Engagement survey questions.

This benchmark area measured the amount of time and the frequency with which students interacted with faculty members in and outside of the classroom. The amount of time students spent with faculty members was consistently supported in the literature research as an item that had a reciprocal relationship with student engagement (Bye, Pushkar, & Conway, 2007; Castillo, 2007; Evelyn, 2004; and Kazmi, 2010). Students who interact with faculty in and outside of the classroom tend to be engaged in the educational process.

For the CATE student, it is not unusual to have an instructor who is a professional or expert in their desired field, but who is also a professional mentor and advocate for job placements. For this reason, it was expected that the CATE students would have indicated that they have more contact with their faculty than the Academic student; however, this was not the case. The results from the Mann-Whitney U test produced a Z value of -1.33 (rounded up) with a significance level of p=.57, making the differences between the two groups not significant. Based on these results, the original hypothesis is rejected and the response to the research question (that asked whether there was a significant difference between the two group's responses) is negative.

Academic Challenge

$HO_{3.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Academic Challenge as indicated by their responses to 15 Community College Survey of Student Engagement survey questions.

This benchmark area contained questions related to determining how academically challenging the student found their schoolwork was during that year. Questions asked about the amount of time student spent preparing for class, studying in and outside of the classroom, seeking assistance through tutors or online resources, contacting faculty with specific academic questions, learning styles, etc. The original hypothesis supported a significant difference between the two groups' responses to these questions. This was based on the academic performance history. Academic students have consistently out-performed CATE students academically for several years. This overwhelming lead was expected to produce higher scores for the Academic student; however this was not the case.

The Mann-Whitney U test yielded a Z value of -.98 with a significance level of .34. The probability value is less than .05 making the result not significant. Based on these results, the original hypothesis is rejected and the response to the research question (that asked whether there was a significant difference between the two group's responses) is negative.

Support for Learners

$HO_{4.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Support for Learners as indicated by their responses to 29 Community College Survey of Student Engagement questions measuring specific areas of learning and the learning experience.

The Support for Learners benchmark area had 29 questions regarding the student's frequency of use and overall rating of college services. The Mann-Whitney U test was conducted to compare student engagement levels between Academic and CATE

students. While there was no statistical significance reflected between the two groups (Z value of -.09 and a significance level of p = .44), there was a significant difference in the mean scores (Academic: 1.94962 and CATE: 1.15942). The original hypothesis supported a significant difference in this benchmark area. It was believed that Academic students actually use more of these types of services on campus than do the CATE students and that they also spend more time on campus when compared to the CATE students. Of particular note was the dramatic difference in these two group's participation in student organizations.

Additionally, on the remaining individual responses to specific questions regarding the college's Support for Learners, there were no significant differences in responses between these two groups. For example, of the 29 survey questions covering Support for Learners, less-than-statistically significant (less than .05) differences between the Academic and CATE students existed in 21 of 29 areas. This is important to community colleges as 13 of these differences were found in areas for which the community colleges are directly responsible.

Based on the results of the Mann-Whitney U tests which support no significant difference between these two groups in the benchmark area of Support for Learners, the original hypothesis is rejected.

Student Effort

$HO_{5.}$ There is no significant difference in the Community College Survey of Student Engagement data (which measures overall student engagement levels) between Career and Technical Education and Academic students in the benchmark area of Student Effort as indicated by their responses to 30 Community College Survey of Student Engagement questions measuring specific areas of student behaviors and academic effort.

Student Effort consisted of 30 questions targeting a student's behavior in and out of the classroom. These questions were designed to measure those activities known to contribute to or distract from student performance. A Mann-Whitney U test was conducted resulting in no statistical significance between these two groups. With a Z value of -1.23 and a significance level of $p = .22$, this suggests that that there is no significant differences between the responses from the two groups.

The original hypothesis supported a significant difference; however, that difference was not expected to be in the favor of CATE. Academic students rated the college's services higher than did the CATE student. This may have been the result of their lack of use since there was a large percent of the CATE students (41%) who did not answer these questions. When reviewing the individual responses in this benchmark area, two of the seven areas reflected significant differences. Among these were how often a student made a class presentation or talked about career plans with an instructor or advisor. CATE students reported higher frequencies of these activities. These findings are not surprising.

In their technical courses, CATE students are generally required to demonstrate learning through a hands-on demonstration or some type of classroom presentation. A review of the syllabi for 10 CATE courses currently being offered at the four participating colleges revealed that 100% of them required a presentation or demonstration of some sort. Contrast this with the larger general education courses, some which rely heavily upon instructor lectures and written assessments, and this result is understandable.

It is also not surprising that CATE students would report that they discussed career plans with an instructor or advisor more often than Academic students. CATE

instructors are generally technical experts in their respective fields, and most are currently working in those fields. For example, the Aeronautics instructor at one of the colleges is also an airline pilot for a major carrier and an instructor pilot for new students. CATE students view these instructors as direct links to the working world they plan to enter and functional experts. As such, they often seek their advice regarding career options and course offerings.

Of these five areas, initial expectations were that the last three would have shown significant differences between the groups (how much the college encouraged contact between students from different backgrounds, whether the college provided the financial support needed, and whether the college encouraged computer use in academic work). Contact is generally encouraged among students of different backgrounds and this is done with both groups; however, the CATE student has a smaller spectrum of racial representation (reporting in only four of the seven categories for race while Academic students reported in all seven). In this instance, larger and more representation do not equate to more opportunities to interface with each. The CATE students are part of a much smaller community; class sizes are generally smaller; interests are similar. This atmosphere encourages more interaction. This fact makes the similar results between these two groups surprising.

Based on the results of the Mann-Whitney U test, there is no statistically significant difference between the two group's results in the benchmark area of Support for Learners, therefore, the original hypothesis is rejected.

Discussion of Findings and Their Implications

It is surprising and unexpected that all five benchmark areas do not reflect significant differences between these two groups. This is partly because of the low

number of CATE students participating and the high number of missed values in their responses. CATE students in this study reflected only seven of 21 possible programs, with the Business Management students making up nearly half of the entire population. This can hardly be representative of a student subset that is comprised of nearly 60% of all entering freshmen at community colleges across the country (Witt, Wattenbarger, Gollattscheck, & Suppiger, 1994). CCSSE managers at the University of Texas in Austin agree. They separate the lines along full-time and part-time student status. When reviewing data from the last three years of CCSSE administrations, they concluded that "full-time students are disproportionately represented as a result of the classroom sampling method that increases the possibility that they are sampled" (Marti, 2009, p. 7). Results in this study could have been dramatically different if the CATE student were equally represented.

In addition to the low numbers of participating CATE students, these students sporadically answered the questions on the survey in general, sometimes with nearly 50% of them not responding to specific questions. These two facts are the main reasons why the results are dramatically different from what was originally projected.

Based on the direction of the results from the five benchmark areas and the results of the statistical tests, along with the responses to individual questions, several implications can be drawn. The theoretical basis for this study was embedded in adult learning theories and the notion that adults learn best when they are actively engaged in their own learning process and play a major role in it. This is believed to have application for both groups. The results suggest that these two groups process information, experience college life and are engaged in the process at the same level. From a practical standpoint, this is not likely.

These two groups of students have several variables that affect them differently and to which they respond differently. This is supported by the demographics in this study. These differences alone suggest that the two groups experience college and engage in it differently. Here are two specific examples.

For Student Effort, of the 29 questions where students were asked to rate their own effort and activities, students reported no significant differences between the groups in 17 areas. This means that both Academic and CATE students consistently rated their activities and behaviors on the positive end of these questions (often/very often). This appears to be extremely high (similar to the reported GPAs). If students from both groups were consistently doing all 17 of these activities a large percent of the time, student engagement levels would be higher, as would the overall academic performance. These results suggest that the inherent weaknesses of student surveys (self-reporting) may be influencing results. A comparison of survey responses with actual student records may be the only way to rectify this problem.

Interaction with faculty has been directly correlated with increased academic performance and student engagement levels. In the Student Effort benchmark results, there are three positive areas related to student interactions with faculty. These are discussing career plans with faculty, discussing ideas outside of the classroom with faculty and discussing grades with faculty. Colleges should seek for ways to encourage this interaction among students and faculty members. It was a positive for both groups of students in this study.

Support for Learner results highlighted (at least for the CATE student) a need to focus some attention on the services that support the student who commutes a far distance to school, takes care of a parent or child, and who spends 20-25 hours per week working

on a job. Many schools have services related to these needs; a more thorough assessment of the needs may allow colleges to develop more effective ways to support these students.

For the CATE student, there is a clear distinction in the services that are provided to help them cope with non-academic pressures. As this population continues to increase, community colleges must develop services that more adequately meet these needs. That is one reason why it is such an important decision where limited fiscal dollars are spent each year. Every effort must be made to measure the use and effectiveness of current services and spend those dollars in ways that can meet the needs that have surfaced through surveys and other means.

Lastly, the Support for Learners benchmark area contained a list of 11 services where students were asked to indicate their use of, satisfaction with, and importance of these services. The number of responses in this area was the lowest of all questions on the survey. It may be that the formatting for the questions (in three columns) suggests that students have an option of which set of questions to answer or that they may pick and choose their responses. This could be emphasized by test administrators prior to the survey. This may help to improve the response rate.

It is imperative to get this set of questions answered as thoroughly as possible as these are the concrete services currently being offered at the colleges. A simple fix may be to list these questions in the same format as other questions (removing the three columns across). This may eliminate the tendency to skip through these questions at will. This area is directly connected to services which cost colleges thousands of dollars to offer them each year. It is vital that colleges get good input from students so that they can make the right decisions. It is important to note that none of the 22 questions in this area reflected any statistically significant differences between these two groups. That

means that students from both groups equally skipped through questions in this area and individually selected the questions that they would answer.

The Limitations of the Study

This study has several limitations. First, it is based on self-reported data from a biennial student survey. It assumes that the information as reported on the student survey is accurate even though it is self-reported data. Inherent in self-reported survey results is the tendency to over- and under-state certain facts. Of particular interest in this study is the students' reporting of their own GPAs. These were used to make comparisons regarding academic performance between the two groups, but they may not be the same as the actual GPAs in student records. It is impossible to determine exactly how much or how little embellishment occurred, therefore the assumption is that the possible embellishment is equal on either end of the spectrum.

Secondly, the timing for the collection of the data has already passed. This study assumes that this data still has application to the general population of community college students and that statistically significant differences will generalize to the student population. It assumes that the population present in the study's results is representative of the community college student body present at each participating college. While differences exist in demographics, locations, program offerings, and foci of missions for each of the colleges that provided data for this study, its findings are assumed to generalize to all colleges in the district and state. Additionally, the large presence of Hispanic students (up to 68% of the total student population at one college) is assumed to generalize to colleges where student demographics differ.

The study also has a limitation with regards to random selection. Colleges that provided data made the selection of records to be released for this study in complete

isolation. While the requests provided to the colleges specified a random process, there is no guarantee of what randomization process was used. The study assumes that the colleges that provided data files used a consistent selection pattern so that student records were pulled utilizing the same formulas used for survey administration.

In order to compensate for these limitations and assumptions, data was collected from four colleges, over two survey administrations, for a total of 1,363 records with zero manipulation of student responses. The lack of randomization was minimized by the fact that any student taking the survey during the two years could have been included in the records that were provided by each college.

Implications (Methodological and Practical)

The implications of this study are many. A major implication is that a real need exists to find the methods and administration processes that will include equitable representations from all subgroups on community college campuses when administering the Community College Survey of Student Engagement. Recognizing both the invested cost of funds and time, it is critical that colleges gain the input from all subsets of students. Results can be dramatically different when inclusion is intentional. If the records used in this study with the dramatically reduced representation from the CATE students are indicative of the overall CCSSE data for these two years, much work needs to be done in this area.

Another implication is in the fact that the results imply that there are slight differences (though not statistically significant) in 13 areas for which colleges are directly responsible for: Support for Learners. At a minimum, it would be worth further investigation to determine why these differences surfaced among these populations. If funds are being expended for services that students are reporting no use for or that they

are not satisfied with, in the critical fiscal environment, colleges need to assess those areas more thoroughly before continuing with the fiscal investments.

With the high number of student survey records containing missing data (which differed per benchmark area), an implication could be that missing data equals negative data. For example, when asked about their GPA, a large percent of the CATE students did not answer the question. Those who did responded with "No GPA at this school" more often than any other response. This implies that they were new or transfer students, a contention that the data on total credit hours did not support. Administrators need to develop a system to review responses for completion before releasing the student.

On a practical level, this study implies that a difference does exist in services used, study habits, and needs outside of college between these two groups. If community colleges want to use their limited resources more effectively, they must have a better picture of the CATE students' needs and opinions. If not, they will continue to expend those limited resources and provide services to a limited population of students while a larger portion of the student body will remain unfulfilled.

It also implies that with the demographic differences from one college to another, the results could be dramatically different if race, age, or gender had been the focus. Literature consistently supports an academic gap between students of different racial, ethnic, and social backgrounds. Consequently, student engagement levels could vary considerably with a focus on practically any of these demographics.

Recommendations for Further Research

A very limited pool of research addresses the CATE students and their increasingly diverse characteristics; fewer compare student engagement levels between CATE and Academic students at the community college level. The academic programs

in CATE continue to expand as local community and corporate industries dictate the need for additional programs that will attract additional CATE students who already make up nearly 65% of new community college students each year. The combination of student growth and program expansion supports the projection for CATE departments to increase in size in the coming years. Further research is needed to accurately gain input from this population and to build a baseline for CCSSE data analysis as none currently exists. It would also benefit community colleges to have a good idea of the CATE students' needs and opinions so that they can cater programs and services to meet those needs.

Further research should also be done using a larger sample of CCSSE survey results from CATE students. Their participation ratio in this study was 1:54. CCSSE administrators must make the extra effort to ensure adequate and commensurate rates of inclusion to gain meaningful input from this population. This is even more important for two reasons. First, the colleges provided the raw data and determined which survey records were provided to this study. There was no predetermined ratio of CATE and Academic students. As a result, this ratio was not known or calculated until after the data was consolidated and analyzed.

Secondly, since the data from the total CCSSE populations at each of the four schools for both years does not separate responses by CATE and Academic students as was done in this study, there was no method to compare this ratio with the published results from the annual administrations State- and District-wide. Consequently, there is no way to determine whether the CATE student was represented at higher ratio in the total sample. Further research could ensure an equal ratio from the beginning.

As indicated in this study, there were considerable variations in responses to questions in all five areas (Active and Collaborative Learning, Academic Challenge,

Student Effort, Support for Learners, and overall Student Engagement). This was the direct result of students not answering certain questions. Participating colleges may want to check the surveys for completion before accepting them back from their students. Additional studies could explore these variations in more detail and provide colleges with more meaningful data regarding these benchmark areas, and more specifically, about the services they provide to their students.

Lastly, further research could also explore data in more detail in the other three benchmark areas (Academic Challenge, Active and Collaborative Learning, and Student-Faculty Interaction). These benchmark areas measure different aspects of student engagement that contribute to overall student engagement levels. Collectively, a study equally utilizing all five benchmark areas could provide more comprehensive analyses of the students' overall experience, the college's services, and student opinion.

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APPENDIX 1

IRB Approval Letter

Dear Paulette,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and that no further IRB oversight is required.

Your study falls under exemption category 46.101 (b)(4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:

> (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and that any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption, or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

Fernando Garzon, Psy.D.
Professor, IRB Chair
Counseling

(434) 592-4054