

**Student engagement and student characteristics as predictors of student
academic achievement at Illinois community colleges**

by

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DEDICATION

This work is dedicated to my children, Rosemary Lynn and David Randall.

You are awesome. I am very proud of you. I love you.

Love, Dad.

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ABSTRACT

The purpose of this study was to discover which student engagement variables and student characteristics predict student academic achievement. The research utilized the standardized national Community College Survey of Student Engagement (CCSSE) to examine data from 19,516 students from 13 Illinois community colleges.

The outcome of student academic achievement was measured by grade point average and total credit hours. The predictive independent variables in this study were student engagement variables from the five standardized composite CCSSE benchmarks and the 38 individual variables from those benchmarks, and student characteristics. Descriptive statistics and ordinal logistic regression were used to analyze the data.

Although four of the five student engagement CCSSE benchmarks were statistically significant for both grade point average and total credit hour, only benchmark one, active and collaborate learning, was strongly predictive for both of those outcome measures. Similarly, there were many student engagement CCSSE individual variables from benchmarks that were statistically significant for either grade point average or total credit hours, although only one individual variable (time students prepared for class) was strongly predictive for both grade point average and total credit hour. Likewise, there were several student characteristics that were statistically significant for grade point average and total credit hours, yet there was only one student characteristic (older students) that was strongly predictive for both outcome measures. In addition to the research findings, this study also illustrated the importance of examining both benchmarks and individual variables from those benchmarks.

CHAPTER 1. INTRODUCTION

Student engagement has shown great promise in helping the significant problem of low student retention. The issue of low student retention historically has been one of the most important concerns in all of higher education. The cost of students leaving college and not completing their education is considerable for students, higher education, and society. In an effort to improve rates of student retention, this research examined which student engagement variables and student characteristics predict student academic achievement.

The relationship between student engagement and student success has been firmly established. The Center for Community College Student Engagement (CCCSE, 2012) reported that “student learning, persistence, and attainment in college are strongly associated with student engagement” (p. 1). Years of extensive research, theory, and literature has clearly shown that student engagement activities are related to positive educational outcomes, student success, and retention (Astin, 1975, 1984, 1985, 1993a, 1993b; Bean, 1980; Carini, Kuh, & Klein, 2006; Chickering & Gameson, 1987; Ewell, McClenney, & McCormick, 2011; Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006; Marti, 2009; Pace, 1980, 1984; Pascarella & Terenzini, 1991, 2005; Tinto, 1975, 1987, 1993, 2012).

Research concerning student engagement provides additional information and empirical evidence that may offer suggestions that could help with low student retention. Student engagement could partially ameliorate this pervasive and historical problem. This study was designed to address the recognized need for specific, practical, and pragmatic research that will increase existing knowledge of student engagement which could help with the problem of low student retention, especially at community colleges.

For this quantitative study, data from the nationally recognized Community College Survey of Student Engagement (CCSSE) were analyzed in order to discover the relationship among student engagement (as measured by the five standardized student engagement CCSSE benchmarks and 38 individual variables from the benchmarks), student characteristics, and student academic achievement (as measured by grade point average and total credit hours).

The data used in this study, collected from 13 Illinois community colleges, came from the Community College Survey of Student Engagement (CCSSE). Because the CCSSE is a standardized instrument that is used widely across the nation (and internationally) the research findings from this study could also be generalized (Ewell et al., 2011; McClenney, 2006) to settings outside of those 13 Illinois community colleges.

Problem Statement

It is well documented that low rates of student retention is a serious problem in higher education. Research also has shown that it is unlikely that students will continue their education if they are not engaged (e.g., Tinto 1987, 1993). Therefore, student engagement in higher education experience may serve to reduce the significant problem of low student retention. The intent of this study was to discover which student engagement variables and student characteristics predict student academic achievement.

Significance of the Study

The problem of low student engagement in higher education has direct consequences in the areas of student retention, students and families, community colleges, and the nation. These “real-life” outcomes directly affect the lives of millions of people and cost billions of dollars. Benefits from student engagement for students and institutes of higher education

could be realized in terms of time, effort, money, resources, personal economies, human capital, and other areas.

Student Retention

Low rates of student retention have been viewed as a significant problem in higher education for many years. According to editor, John M. Braxton (2000b) in *Reworking the Student Departure Puzzle*, “the study of college student departure has been the object of research for over seventy years” (p. 257).

The reasons why students leave college, or were not retained, have been studied for many years (e.g., Tinto, 1975, 1987, 1993, 2012). Historically, to address this important concern, there has been research and discussions in areas such as student retention, student departure, student persistence, attrition, completers and noncompleters, persisters and nonpersisters, student completion, student success, student academic attainment, student involvement, student participation, student behaviors, withdrawal, dropouts, stopouts, and swirl.

Students who leave college have low odds of completing their education (Twigg, 2005). According to Tinto (1987), “more students leave their college or university prior to degree completion than stay” (p. 1). Research also has revealed that many students start college, fewer continue, and yet fewer graduate (McCormick & McClenney, 2012; Tinto, 1987, 1993). Graduation rates are especially low at community colleges; a fact reflected in the under 20% graduation rate at Illinois community colleges (American Association of Community Colleges [AACC], 2012). As a result, student retention is crucial to both students attempting to meet their educational goals and the business of higher education.

Benefits to Students and Families

For many students, educational engagement can make the difference between success and failure, opportunity and stagnation, and employment at a living wage or poverty.

Without education, students may not obtain the tools necessary to be competitive in the increasingly technological workplace and global market. Student engagement, resulting in academic achievement and retention in education, can bring about an improved quality of life for students and families.

During these times of economic austerity, with costs for higher education sky rocketing, improved student engagement can lead to direct economic benefits for students and their families by getting a better “bang for their buck.” Tuition and fees have increased significantly (AACC, 2012). For example from 1990 to 2000 tuition increased at public 2-year colleges by 62%, by 70% at private universities, and by 84% at public universities (Kuh et al., 2006).

Research has traditionally shown a strong positive correlation between student academic achievement and income. Tinto (1993) reported that students who complete a bachelor degree will, on average, earn one million dollars more over their lifetimes than will those who were not enrolled in college. Significant financial gains were also reported for students who enrolled in community colleges and earned associate's degrees (Tinto, 2012).

In addition to financial benefits there are other significant benefits of earning a higher education degree such as a more involved and supportive citizenry and a more competent and efficient workforce (Baum & Payea, 2005; Cohen & Brawer, 2003; CCSSE, 2012; Kuh et al. 2006; O'Banion, 1997; Pascarella & Terenzini, 2005; Snyder & Dillow, 2012; Tinto, 2012; Upcraft, Gardner, Barefoot, & Associates, 2005).

Benefits to Community Colleges

Higher rates of student engagement can provide important benefits to community colleges, as by design, they offer opportunities to millions of students who might otherwise not have the opportunity for a higher education (Bailey, Calcagno, Jenkins, Kienzl, & Leinbach, 2005). See history of education below for additional information.

The significant need for student success was emphasized by Kay M. McClenney, Director of the CCCSE who wrote that “never has it been so clear that the futures of the *individuals, communities*, and the *nation* rests significantly on the ability of community and technical colleges to ensure that far greater numbers of their students *succeed* in college” (emphasis added; p. i).

Nationally, community colleges serve about half of all students (in Illinois the percentage of students enrolled in community colleges is higher; AACC, 2012), yet community colleges often receive only a small portion of public funding (see the literature review chapter for details). Colleges are continually being asked to accomplish more with fewer resources (CCSSE, 2012). Resulting increases in student tuition and fees have direct negative impacts on students who already are economically stressed and challenged.

To increase student access, many community colleges have open admissions policies. Partially as a result of those open admission policies, and partially due to the unique characteristics of community college students, many community college students face significant engagement challenges. For example, the majority of community college students is employed and has dependents (CCSSE, 2012). Further challenges to student engagement for community college students include those who are enrolled part time, first-generation, non-traditional, of lower socioeconomic status, and/or from a minority race/ethnicity

(McClenney, 2006). Specific challenges to community college students include a significant need for developmental education (usually for no credit). Commuter students at community colleges may face challenges of not feeling engaged or connected in out-of-class campus activities such as learning communities, orientation activities, clubs, organizations, or sporting or campus events. Therefore, it is not surprising that fewer than half (45%) of entering students at community colleges with the goal of earning a degree or certificate accomplish that goal within six years (CCSSE, 2012).

In addition to being centers for learning, higher education is also “big business”—a multi-billion-dollar-a-year industry. Therefore, efficiencies and improvements in student engagement can benefit the “bottom line” for both students and those institutions. Colleges and universities know well that it is much more expensive to continually recruit new students than to retain current students. It is also known that once college students drop out of college, their chances of completion are greatly reduced (Twigg, 2005).

Guided by empirical evidence, the student engagement activities that have empirically demonstrated the best return on investment can drive student success and financial decisions for higher education. Based on the type of data described above, the information from this research can contribute to institutional policy (see implications for policy in chapter 5). The findings from this research can directly inform college administration which aspects of student engagement and student characteristics best predict student academic achievement. As a result, policy can be tailored to specific college needs. For example, if it is discovered that nontraditional students need more evening courses to help student engagement, such programmatic changes can be made.

Benefits to the Nation

There has been much written about the importance and benefits for a nation to have an informed and educated citizenry along with a competitive and competent workforce (AACC, 2012; CCSSE, 2012; Kuh et al., 2006; Pascarella & Terenzini, 1991, 2005). This is essential and vital to a nation. Yet the United States has been losing significant advantages in those vital areas. It is clear that, in order to remain economically viable and competitive, the United States needs to do a better job of educating and training its populace. Significant concerns over developing and maintaining a qualified workforce have been especially keen in these rapidly increasing technological times, especially in an ever-increasing international global marketplace. The knowledge economy is growing both nationally and internationally.

Historically, a major focus of community colleges has been on career, technical, vocational, and workforce training (hence previous verbiage of community colleges as “vo-tech,” or “trade schools”). Community colleges have been identified as important entities to meet the increased need for vocational, technical, and workforce education and training. The more students are engaged, the more likely they will complete their education or training, resulting in a better educated and trained citizenry.

Purpose of the Study

The purpose of this study was to determine which student engagement variables and student characteristics predict student academic achievement at Illinois community colleges. It has been well documented that the vast majority of research and theory on student engagement and student retention has focused on 4-year colleges and universities (e.g., McClenney, 2006; Pascarella, 2001; Pascarella & Terenzini, 2005; Townsend & Bragg, 2006). Building on previous theory, research, and literature, it is the intent of this study to

contribute information concerning student engagement to the body of knowledge in higher education. Knowledge regarding student engagement could inform key groups such as faculty, administrators, researchers, theorists, policymakers, funding sources, and accrediting bodies. Outside of the academy, the findings from this research could directly benefit students and their families and, as a result, society.

Research Questions

To guide this research, the following six research questions were examined to determine which student engagement variables and student characteristics predict student academic achievement.

1. Do student engagement CCSSE benchmarks predict grade point average at Illinois community colleges?
2. Do student engagement CCSSE individual variables (from benchmarks) predict grade point average at Illinois community colleges?
3. Do student characteristics predict grade point average at Illinois community colleges?
4. Do student engagement CCSSE benchmarks predict total credit hours at Illinois community colleges?
5. Do student engagement CCSSE individual variables (from benchmarks) predict total credit hours at Illinois community colleges?
6. Do student characteristics predict total credit hours at Illinois community colleges?

Definitions of Key Terms

For clarity, consistency, and understanding, definitions and explanations for the following key terms and abbreviations are provided.

Associate's degree: an academic degree normally requiring at least two years, but fewer than four years of full-time equivalent college work (Phillippe & González Sullivan, 2005). At Illinois community colleges, an associate's degree requires at least 60 credit hours.

Center for Community College Student Engagement (CCSSE): a center whose purpose is to examine student engagement at community colleges. The Center administers, along with other national student engagement surveys, the Community College Survey of Student Engagement (CCSSE).

Certificate: a formal award certifying the satisfactory completion of a postsecondary program (Phillippe & González Sullivan, 2005). Certificates at community colleges are often offered in areas of career, vocational, technology, and workforce development. Many certificate programs require a shorter time for completion than do associate's degrees.

Community college: used as a general term to broadly describe 2-year colleges. For this study, the term is used to describe the following types of 2-year colleges: community colleges, junior colleges, technical colleges, private colleges, proprietary colleges, and tribal colleges.

Community College Survey of Student Engagement (CCSSE; pronounced "Sessie"): the standardized national research-based survey instrument created by the CCCSE to assess student engagement at community colleges.

Community College Survey of Student Engagement benchmarks: groups of conceptually related items that address key areas of student engagement, learning, and persistence that educational research has shown to be important in quality educational practice. The five student engagement CCSSE benchmarks of effective educational practice in community colleges are (a) active and collaborative learning, (b) academic challenge, (c) student effort, (d) student–faculty interaction, and (e) support for learners. Each benchmark is composed of six to ten individual CCSSE questions.

College: for purposes of this study used as a general term to described 2-year and 4-year colleges or 4-year universities. Similarly, in higher education literature, the term college is used at times to describe both colleges and universities. For example, although the title of Tinto’s (2012) recent book, *Completing College, Rethinking Institutional Action*, refers to colleges, the principles in his book apply to both colleges and universities.

Developmental education: generally includes courses in reading, writing, and mathematics for college students who lack the skills necessary to perform at the college level (Phillippe & González Sullivan, 2005).

English as a Second Language (ESL): the instruction of English for students who do not use English as their first language.

First-generation student: a student whose parents have not earned a baccalaureate degree.

Full-time student: a student enrolled in 12 or more credits per term at a postsecondary institution (24 or more contact hours a week; Phillippe & González Sullivan, 2005).

Grade point average: one of the two outcome dependent variables in this study that measured student academic achievement. In the CCSSE, students are asked to record

their overall college grade point average (in categories). See research methodology for an operational definition of grade point average.

Higher education: for purposes of this study, postsecondary education (primarily undergraduate) at colleges and universities, 2-year and 4-year institutions, public and private institutions, and private not-for-profit and private for-profit institutions.

Human capital: individual attributes that result in economic gains for individuals or society. “Investment” in higher education is an example of human capital.

Illinois community colleges: for this study, the community colleges that participated in the 2010 CCSSE. See data collection locations for additional information.

Integrated Postsecondary Education Data System (IPEDS): provider of data resulting from a series of surveys conducted by the U.S. Department of Education. IPEDS provides aggregate data at the college (and university) level for areas such as enrollment, degree and certificate completion, institutional finances, institutional characteristics, faculty salaries, and staff and faculty status. Based on a common rubric, IPEDS data are often used to compare data across institutes of higher education.

Knowledge economy: an economic system in which economic wealth is increasingly related to higher-order cognitive process, which is often obtained through higher education. In a knowledge economy, knowledge is a valued economic commodity. The knowledge economy is significantly increasing in the United States and internationally.

Land-grant colleges: colleges founded as a result of the Morrill Act of 1862 when the federal government allocated land for institutes of higher education (see history of education in chapter 2 for additional information).

Learning communities: student communities formed at a college or university for students enrolled or interested in a specific course of study or curriculum.

Lifelong learning: common components of lifelong learning include a variety of courses and educational opportunities often offered at community colleges. Such courses typically include courses such as credit courses, personal interest noncredit courses, and vocational courses.

Location of community colleges (for CCSSE): CCSSE categorizes the location of community colleges into three groups: rural-serving, suburban-serving, and urban-serving. Community colleges in all three categories were represented in this research.

National Survey of Student Engagement (NSSE; pronounced “Nessie”): a research-based survey instrument that focuses on student engagement at 4-year colleges and universities. NSSE works in partnership with the CCCSE, which examines student engagement at community colleges.

Online/distance learning: coursework conducted primarily electronically (usually online). Online students typically do not meet face to face with their instructor or classmates. Online/distance learning requires alternate pedagogical and teaching modalities from traditional structured classes. There currently is great growth in postsecondary educational online/distance/hybrid and alternative delivery systems (including recent “massive open online courses”; MOOCs).

Open admission: a policy at community colleges that typically allows enrollment for students who have a high school diploma; often students do not need a specific grade point average, class ranking, or score on a standardized test (e.g., ACT, SAT) for

admission. An important purpose of open admissions at community colleges is to increase the accessibility of those institutions.

Organization of community colleges (for CCSSE): CCSSE organizes community colleges by types of organization. All three types of CCSSE institutions were represented in this study: single campus, multicampus, and colleges in a multicollege system (Chicago).

Part-time students: students enrolled for 11 or fewer credits per term at a postsecondary institution (fewer than 24 contact hours a week; Phillippe & González Sullivan, 2005).

Pell financial award: the nation's primary federal financial aid program for higher education, named for Claiborne Pell, a former senator from Rhode Island.

Perkins Acts: a series of federal legislative initiatives designed to support the quality of education in the United States (e.g., Perkins I, II, III, and IV).

Public postsecondary institutions: postsecondary institutions operated by publically elected or appointed officials. Those institutions derive their funding primarily from public sources (Phillippe & González Sullivan, 2005).

Reverse transfer: when a student with a bachelor's, master's, or doctoral degree enrolls at a community college. Increasingly, enrollments at community colleges are from reverse transfers.

STEM fields: science, technology, engineering, and mathematics. Female students traditionally have been underrepresented in the STEM fields.

Size of CCSSE community colleges (categories): CCSSE organizes community colleges into the following four size categories: (a) small = 0–4,499 students, (b) medium = 4,500–7,999 students, (c) larger = 8,000–14,999 students, and (d) extra-large = 15,000 or

more students. All four CCSSE size categories of Illinois community colleges were represented in this research.

Size of CCSSE community colleges (total enrollment counts): CCSSE obtains the enrollment counts for community colleges from IPEDS data. Total CCSSE enrollment counts for Illinois community colleges in this study ranged from 2,124 students to 16,359 students. For 2010 CCSSE enrollment counts, 2008 IPEDS data were used.

Student academic achievement: the outcome for this study, measured by grade point average and total credit hours. Student academic achievement is necessary for student retention (i.e., students cannot continue their education with an insufficient grade point average or insufficient number of credit hours). Measures of student academic success/achievement (including grade point average and total credit hours) are common and accepted outcome measures in higher education (see research methodology in chapter 3 for additional information).

Student academic achievement outcome variables: grade point average and total credit hours, this study's two measures of student academic achievement. These are two standard outcome variables of student academic achievement commonly used in higher education.

Student characteristics: a general phrase used broadly in this study to describe demographic and other student characteristics that may predict student academic achievement. The student characteristics examined in this study were gender, age, race/ethnicity, enrollment, married, children, dependents, work for pay, public assistance, orientation program, English, and international student. See research methodology in chapter 3 for operational definitions of student characteristics.

Student engagement: a general phrase used broadly in the literature and in this study. In its simplest form, student engagement is the extent to which students invest in educationally meaningful activities.

Student engagement variables: one set of the independent variables in this study. Student engagement is measured by the five standardized student engagement CCSSE benchmarks and the student engagement CCSSE individual variables from those benchmarks. See research methodology for operational definitions of the five student engagement CCSSE benchmarks and student engagement CCSSE individual variables from those benchmarks.

Student success: a general phrase used broadly in the literature to describe a variety of positive educational student outcomes. For this study, student academic achievement (measured by grade point average and total credit hours) was a more focused, defined, and measured aspect of student success.

Student persistence: generally defined as whether a student is continuously enrolled in higher education (i.e., the student has persisted in his or her education).

Student retention: in its simplest form, problems of student retention occur when students leave college. For example, a student who drops out or is dismissed was not retained by that higher education institution. Significant negative ramifications result from problems of low student retention (see significance of the study for additional information).

Total credit hours: one of the two outcome dependent variables in this study. Total credit hours is a measure of student academic achievement. In CCSSE, students are asked to record the number of total credit hours earned (in categories) at “this” college (not

including the current term). See research methods for the operational definition of total credit hours.

Tribal colleges: colleges operated by a Native American nation. Tribal colleges are under the jurisdiction of the Bureau of Indian Affairs.

Two-year public institutions: a term used by the National Center for Education Statistics (Snyder & Dillow, 2012) for national higher education statistics. Two-year public institutions often are referred to as community colleges.

Vocational education: instruction focusing on providing education and training for the workforce. Community colleges have a long, rich, and strong tradition of providing vocational, career, technological, and workforce education.

Assumptions

There were three major assumptions underlying this study. The assumptions involved the CCSSE, measures of outcome dependent variables, and differences in college experiences.

1. An assumption was made that the CCSSE is a valid and reliable measure of student engagement at community colleges (see literature review for additional information).
2. This study used two proxy measures for student academic achievement. An assumption was made that the commonly used and accepted measures of grade point average and total credit hours are acceptable proxy measures of student academic achievement (see research methodology for additional information).
3. An assumption was made that the overall college experience, culture, and milieu is different in some ways for students enrolled in community colleges than for

students enrolled in 4-year colleges and universities (especially full-time, traditional, residential students). If that assumption is correct, then separate student engagement research is warranted for community colleges (e.g., Marti, 2009).

Organization of the Dissertation

This dissertation is organized into five standard chapters. Chapter 1 provided an introduction to the study, chapter 2 reviews the literature, chapter 3 describes the research methodology, chapter 4 examines the research findings, and chapter 5 discusses the research findings.

Summary

The purpose of this study was to determine which student engagement variables and student characteristics predict student academic achievement. This chapter began with an introduction to the study, which was followed by the problem statement that focused on student engagement as a way to help with the problem of low student retention. That information was followed by the significance of the study, which focused on the broad areas of improving low rates of student retention, benefits to students and their families, benefits to community colleges, and benefits to the nation. The purpose of this study was to contribute information about student engagement to the body of knowledge, especially for community colleges. Six research questions were posed that guided this research. Key terms were defined. Assumptions regarding CCSSE, dependent variables, and college experience were identified. The chapter concluded with an outline of the organization of the dissertation and a summary.

CHAPTER 2. LITERATURE REVIEW

*Who then are the true philosophers?
Those who are lovers of vision and truth.*

Plato (360 B.C.)

In the quote above, Plato (360 B.C.) associated true philosophers with those who love vision and truth. This literature review attempts to provide vision and truth via providing the context and information about student engagement and community colleges.

Overview

This chapter begins with a synthesis of theory, research, and literature regarding student engagement (including the theoretical orientation for the study). That is followed by providing contextual information about the CCSSE (including reliability and validity) and the National Survey of Student Engagement (NSSE). Further current contextual information for the study (e.g., gender, age, race/ethnicity, enrollment, finances) is provided by profiles of Illinois community colleges, Illinois higher education, a national profile of community colleges, and national postsecondary education. Next, the overall historical context for community colleges and student engagement is presented. The chapter concludes with a historical numerical summary of community colleges, a note on vocational education, and a summary.

Student Engagement: A Synthesis of Theory, Research, and Literature

As explained in chapter 1, the current practice of student engagement has evolved, in part, as a response to the past and present significant problem of low student retention. For many years higher education has had great concern about students not completing their college education.

The core issue of student retention concerns why college students are no longer in college. Why did students leave college? Why did students not continue their education? Historically, the two usual main “suspects” for those conditions were “student problems” or “institution problems.” Are the reasons students are not in college because of student characteristics (problems) or institutional variables (problems)? Or is it that, as Kuh et al. (2006) wrote, “at the intersection of student behaviors and institutional conditions is *student engagement*” (p. 8). Student engagement seeks to empower students to address various student issues and institutional issues.

The literature divides student problems related to low student retention into areas such as social problems, academic problems, financial problems, psychological problems, etc. Likewise, institutional problems related to low student retention have been divided into areas such as insufficient academic support (e.g., tutoring), insufficient student support (e.g., academic advising and career planning), insufficient financial support, etc.

Institutional administrators and others know that once a student leaves college his or her chances of returning are small. It is also known that it is much cheaper to retain students than to constantly recruit new students. Without retention, there is a need to constantly find and gather new students. It is better to fix a hole in a bucket than to continually lose what was in the bucket. Student engagement provides promise for the problem of low student retention.

To provide context for student engagement the work of Vincent Tinto, Alexander Astin, C. Robert Pace, W. G. Spady, Ernest T. Pascarella, Chickering and Gamson, and other select literature is reviewed.

Vincent Tinto

The theoretical perspective for this study was based on the work of Tinto (1975, 1987, 1993, 2012). For over 37 years Tinto has examined the serious problem of why students leave college (low student retention) and do not complete their education. As indicated above, overall, theories that have examined student retention and student engagement often have examined student characteristics and institutional characteristics. In general, Tinto's work focused more on institutional characteristics as ways to increase student success (trying to avoid a "blaming the victim/student" emphasis and focus).

Tinto's theoretical work has been described in various ways (by himself and others) including the theory of student departure, integration theory, etc. In 1993, Tinto described his model as an "interactive model of student departure" (p. 112). In Tinto's 2012 publication, he referred to his work as a theory of retention. Many consider Tinto's theory as foundational for student engagement.

In their book, *Higher Education: Handbook of Theory and Research, Volume XII*, Braxton, Sullivan, and Johnson (1997) described Tinto's theory as having achieved near paradigmatic status and reported that his theory had been extensively tested and cited. A review of the literature on student success (Kuh et al., 2006, p. 11) reported that Tinto's (1975, 1987, 1993) theory is the dominant sociological perspective. In addition, Pascarella and Terenzini (2005) reported that Tinto's (1975, 1987, 1993) theory is probably the most widely used framework that examines the interconnections between students and their college experience. According to estimates in 2004, approximately 775 doctoral dissertations had been based on Tinto's work (Pascarella & Terenzini, 2005). It is generally

acknowledged that Tinto's theory is one of the more highly developed models in regards to student retention.

Many studies have examined, researched, and tested various aspects of Tinto's theoretical work. His work has been scrutinized, supported, and criticized. Some of the most common early criticisms of Tinto's (1975, 1987) theory were that his research focused primarily on full-time students at 4-year colleges and universities. Further criticism focused on the lack of specific attention paid to special groups such as adult populations and racial and ethnic minorities. The same argument could be applied to other student groups represented by gender, sexual identity, religion, etc. However, there have been some studies that have shown Tinto's (1975, 1987) theory holds for both White and minority students (see Pascarella & Terenzini, 2005, p. 56).

Tinto used four existing surveys to support his theoretical work: the National Longitudinal Survey (the original survey contained 104 questions), High School and Beyond, the American College Testing Program Survey of Institutions, and the Survey of Retention at Higher Education Institutions (Tanaka, 2002, p. 265).

Tinto (1975): Integration model of student dropouts. Tinto initially described his theory in his 1975 article, "Dropout from Higher Education: A Theoretical Synthesis of Recent Research." The intent of Tinto's article was to explain why some students drop out while other students persist in their education. To accomplish that objective Tinto focused on the overall academic and social integration of students within the institutional culture.

Tinto's (1975) article commenced with a description of his theory followed by a review of the literature on students who drop out. That article focused primarily on the issue of why students drop out of college. In the first paragraph of his article, Tinto (1975)

presented two challenges. First, he challenged the field to increase definitional clarity for types of dropouts. For example, Tinto (1975) advocated that distinctions be made between involuntary dropouts due to academic failure and students who voluntarily choose to drop out. His second challenge was to develop theoretical models to explain why students leave institutions of higher education (student retention). This second challenge, has been an important component in student engagement.

In Tinto's (1975) article he stated the intent of his theory: "This paper attempts to formulate a theoretical model that explains the processes of interaction between the individual and the institution that lead differing individuals to drop out from institutions of higher education" (p. 90). As illustrated above, important themes of Tinto's (1975, 1987, 1993, 2012) theory are the individual, the institution, and the interaction/integration between students and institutions of higher education.

Tinto's (1975) theoretical work was influenced by Spady's (1970) use of Durkheim's (1951) theory of suicide. Tinto (1975) drew from Durkheim's work that emphasized the concept of social integration and also on work from social psychology regarding individual suicide and the field of economics of education with the work on cost-benefit analysis of individual decisions regarding investment in alternative educational activities. Overall, Tinto's (1975) theory emphasized the concept of integration as a key to reducing student dropouts.

Tinto (1975) posited that students enter college with various individual characteristics and attributes (e.g., gender, race, academic ability). The student's background includes precollege experiences (e.g., high school achievement) and family background (i.e., socioeconomic background, parental educational level, and parental expectations). Overall,

Tinto (1975) purported that student background characteristics directly influence student departure decisions, commitments to the institution, and the goal of college graduation. More specifically, he noted that increased levels of student social integration (e.g., interaction with peers or faculty, extracurricular activities—for example, no “student strikes”; p. 92) results in increased levels of commitment to the institution. Likewise, increased levels of student academic integration (structural and normative) results in increased commitment to the goal of graduation. The combination of institutional commitment and student’s commitment to graduation results in student persistence. Tinto (1975) also recognized that, in addition to the principles of his theory, external forces may cause students to dropout. For a visual representation of those concepts, see Tinto’s (1993) longitudinal model of institutional departure in Figure 1.

In Tinto’s (1975) article, the presentation of his theory was followed by an extensive review of literature regarding why students drop out from college (retention). That review was divided into the following categories.

- Individual characteristics and college dropouts: family background, individual characteristics, past educational experiences, and goal commitment
- Interaction within the college environment: academic integration (its varying forms), social integration (its multiple dimensions), social integration, and institutional commitment
- Institutional characteristics and dropouts (providing early material on 2-year and 4-year colleges): college quality-student composition, dropouts (e.g., “frog-pond”), and institutional size and dropouts.

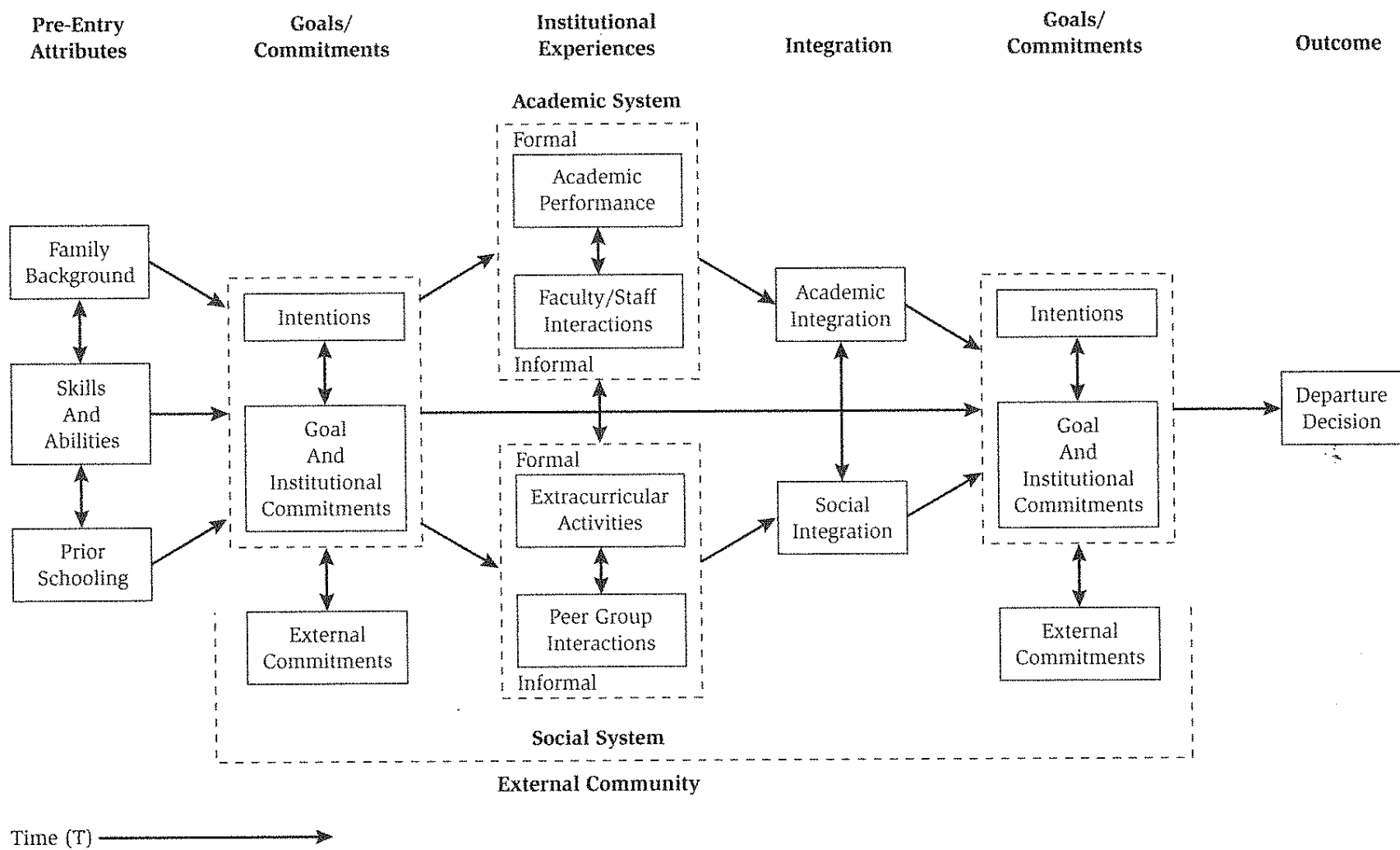


Figure 1. Tinto's (1993) model of student departure (from *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.), by V. Tinto, 1993, p. 114).

Tinto (1987): *Leaving College*. In his 1987 publication, Tinto (p. 92) added work from Dutch anthropologist Van Gennep's study on the cultural rites of passage described in *The Rites of Passage*. Similarities could be drawn between Van Gennep's social anthropological work and developmental psychological stage theories of Sigmund Freud (i.e., five stages of psychosexual development), Jean Piaget (i.e., four stages of child cognitive development), and Eric H. Erickson (i.e., eight stages of development across the lifespan).

Influenced by Van Gennep, Tinto (1987) wrote that college students first must separate from their former groups (e.g., family, friends), then undergo a period of transition during which they form new associations, and finally incorporate the norms of new groups or institutions. According to Tinto (1987), students who leave college were not successful in separating from groups of family, friends, etc. and did not successfully adapt to the institutional environment. Tinto also expanded on the work of Durkheim in his 1987 publication.

Tinto's 1987 publication presented six useful principles of institutional action that affect successful programs:

1. Institutions should ensure that new students enter with or have the opportunity to acquire the skills needed for academic success.
2. Institutions should reach out to make personal contact with students beyond the formal domains of academic life.
3. Institutional retention actions should be systematic in character.
4. Institutions should start as early as possible to retain students.
5. The primary commitment of institutions should be to their students.

6. Education, not retention, should be the goal of institutional retention programs.

(pp. 138–140)

All six of Tinto's principles for institutional effectiveness serve as solid pillars for student engagement.

Tinto (1993): *Leaving College: Rethinking the Causes and Cures of Student*

Attrition. Tinto (1993) made several changes in the second edition of *Leaving College: Rethinking the Causes and Cures of Student Attrition*. He updated and expanded material, and added to his theory. Since his previous book, Tinto (1993) noted an explosion of research and policy reports regarding student retention (p. ix), which serves as a foundation for student engagement today.

Changes in Tinto's 1993 book included new research and theoretical material on students of color, nontraditional students, and community colleges. In addition, he added material on the importance of the classroom (as learning communities) for persistence. Tinto (1993) also focused on the importance of the classroom for engagement in his later writings (especially for part-time commuter students). In his new work he included material on doctoral student persistence based on retention principles of undergraduate education.

A significant addition in Tinto's 1993 volume was his seven principles of effective implementation for institutions for retention (listed below). There is wisdom and practical application in Tinto's principles and institutions of higher education would be well served to implement them. Implementation of his principles could lead to conditions more favorable for student engagement and hence improved student retention. Although in his principles he called for overall institutional commitment to retention, he also placed responsibility for practical implementation in the hands of those most directly involved in the process (e.g.,

faculty and staff). He also wisely advocated for “frontloading” retention efforts and the continual assessment of actions with an eye toward improvement. Tinto’s (1993) seven principles of instructional effectiveness are as follows:

1. Institutions should provide resources for program development and incentives for program participation that reach out to faculty and staff alike.
2. Institutions should commit themselves to a long-term process of program development.
3. Institutions should place ownership for institutional change in the hands of those across the campus who have to implement that change.
4. Institutional actions should be coordinated in a collaborative fashion to insure a systematic, campus-wide approach to student retention.
5. Institutions should act to insure that faculty and staff possesses the skills needed to assist and educate their students.
6. Institutions should frontload their efforts on behalf of student retention.
7. Institutions and programs should continually assess their actions with an eye towards improvement (pp. 149–152).

Tinto (2012): *Completing College*. The focus of Tinto’s (2012) most recent book, *Completing College* was on actions that institutions can take to help student persistence, to help their learning, and as the title implies, to help them complete college. The four main foci for institutions to help student graduate are expectations, support, assessment feedback, and involvement (a chapter is devoted to each area). Tinto (2012) provided many case studies that exemplified those principles.

Alexander Astin

Astin, like Tinto, made significant contributions to student engagement research. In fact, both Astin and Tinto made significant contributions to the field in the same year: 1975. In Tinto's 1975 article, he reviewed the literature on student dropouts and presented his theory, whereas Astin made a significant contribution to the field with his 1975 book *Preventing Students from Dropping Out*.

Like Tinto's (1975, 1987, 1993, 2012) theoretical work, Astin's (1984) student involvement and development theory contributed to the body of work on student engagement. Similar to Tinto's (1975, 1987, 1993, 2012) theory that emphasized academic and social *integration*, Astin's (1984) theory emphasized student *involvement*, proposing that increased student involvement influenced increased retention.

According to Pascarella and Terenzini (1991, p. 51), in the early 1970s Astin proposed one of the first, most durable, and influential college impact models. Pascarella and Terenzini (1991, p. 51) also stated that Astin's (1975, 1984) and Tinto's (1975, 1987) models were "quite similar" in regard to explaining college student attrition. As with the Tinto's (1975, 1987) model, Astin's (1975, 1984) model has been extensively examined. Similar to criticisms about Tinto's model, much of Astin's theory focused on full-time, traditional-age, residential students at 4-year institutions. It could be argued that the work of Tinto and Astin are two of the most significant contributions to student engagement.

As the title of his theory implies, the focus of Astin's (1984) theory is on student involvement. He argued that student success and persistence could be increased by increased personal involvement, defining involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 297). Astin's (1984) theory

emphasizes observable and measureable behavioral components more so than attitudinal or emotional factors; “it is not so much what the individual thinks or feels, but what the individual does, how he or she behaves” (p. 298). His model helps to isolate student behaviors and institutional conditions that have the greatest impact on student learning and growth. Astin (1985) summarized his theory of involvement by stating simply, “students learn by becoming involved” (p. 133)—a statement that encapsulates student engagement.

The five basic postulates of Astin’s (1984) theory are as follows:

1. Involvement refers to the investment of physical and psychological energy in various objects. The objects may be highly generalized (the student experience) or highly specific (preparing for a chemistry examination).
2. Regardless of its object, involvement occurs along a continuum; that is, different students manifest different degrees of involvement in a given object, and the same student manifests different degrees of involvement in different objects at different times.
3. Involvement has both quantitative and qualitative features. The extent of a student’s involvement in academic work, for instance, can be measured quantitatively (how many hours the student spends studying) and qualitatively (whether the student reviews and comprehends reading assignments or simply stares at the textbook and daydreams).
4. The amount of student learning and personal development associated with any educational program is directly proportional to the quality of student involvement in that program.

5. The effectiveness of any educational policy or practice is directly related to the capacity of that policy or practice to increase student involvement (p. 298).

Astin's (1984) first three postulates focus on "student involvement," whereas his last two postulates are directed toward "institutional involvement" by designing educational programs for students. His fourth postulate is foundational for student engagement (paraphrased): student learning is directly proportional to the quality of student involvement (engagement).

In addition, Astin (1984, p. 301) purported three principles inherit in his theoretical model. First, student psychic and physical time and energy are finite. Astin (1984) reported a type of zero-sum game in which time and energy spent in one area (e.g., with friends or family) will necessarily deplete reserves of time and energy available for other activities (e.g., studying). For example, a student cannot "party" with others and study alone at the same time. More time spent partying results in less time available for studying. Astin (1984) also stressed the importance of students' time as one of their most important resources.

Similar to the first principle, the second principle reported a direct relationship between the amount of time and effort expended by the student and the achievement of development goals. The institution plays a direct role in that principle in that institutional practices, policies, and physical structures (e.g., location of buildings and events) can directly affect the amount of time spent on activities (e.g., time spent walking to classes).

Finally, Astin's (1984) theory places emphasis on involvement. He preferred the term *involvement* because it connotes more of a behavioral component as opposed to simply a psychological state. Astin's (1984) choice of verbiage supports his emphasis on observable and measureable behaviors and actions, hence the theory of student *involvement*.

Astin (1984) reported that the chances of students dropping out of 2-year colleges are greater than for students at 4-year colleges. He identified the following specific challenges of student involvement (engagement) that face students at 2-year colleges: commuter students, students enrolled part time, and part-time instructors (p. 302). Note the common theme at 2-year colleges of *part-time* instructors, *part-time* students, and *commuters* (see the CCSSE 2012 Cohort section later for additional information). Those characteristics highlighted by Astin (1984) support that the environment and culture at community colleges can be different from that at 4-year institutions.

According to Astin (1984), his theory of student involvement had its roots in a longitudinal study of college dropouts described in his first book, *Preventing Students from Dropping Out* (Astin, 1975). Using the Cooperative Institutional Research Program Survey, Astin (1984) identified factors that were related to college persistence. In his earlier research, Astin (1970a, 1970b) discovered that student involvement factors were related to student persistence, and inversely, the lack of student involvement was related to students who dropped out.

From his earlier work, Astin (1970a) also is known for his input–environment–outcome (I–E–O) model. Similar to Tinto’s (1975, 1987) work, Astin (1970a, 1970b) accounts for incoming characteristics of entering students (inputs = I), such as demographic variables; social influences (environment = E); and academic factors (outcomes = O). The initial inputs are affected by the two main environmental characteristics of (a) student behaviors (e.g., study habits and interaction with faculty and peers) and (b) institutional conditions (e.g., support services, resources, organization of the curriculum). The impact of the inputs (I) on the environment (E) results in the outcomes (O). More specifically, inputs

are factors students “bring with them” to college (e.g., demographic characteristics; familial, social, academic experiences), environmental factors are various activities and interactions experienced while at college, and outcomes are postcollegiate student knowledge, skills, attitudes, values, beliefs and behaviors.

There have been some challenges in the literature that question if Astin’s (1975, 1984) work rises to level of fully developed theory (e.g., Pascarella & Terenzini, 1991). This study treated Astin’s work as theory.

C. Robert Pace

As with Tinto’s and Astin’s work, Pace’s work also has contributed to student engagement. Pace’s (1980, 1984, 1990) theory of quality of effort has similarities to the work of Tinto (1975, 1987) and Astin (1975, 1984). Although Tinto (1975, 1987) focused on the integration of social and academic factors and Astin focused on the student involvement, Pace’s (1980, 1984, 1990) theory focuses on the extent to which students engage in opportunities offered by an institution. To differing degrees, the theories of all three of these scholars focus on student involvement, which is key for student engagement.

Pace (1984) posited that quality of effort is a result of the student’s engagement in academic, intellectual, personal, and interpersonal opportunities afforded by the collegiate environment. According to Pace (1984), increased student effort in various academic and social activities results in increased personal development at both 2-year and 4-year colleges. His theory supports an analysis of student and institutional efforts.

Pace’s (1984) theory is based on two perspectives. The first perspective is that education is both a process and a product, and the second perspective is that student effort

and time is required for all learning and development. Pace (1984) defined time as a frequency dimension and effort as a quality dimension.

Pace's (1984) quality of effort theory is supported by research from the 1984 survey he adapted from the College Student Experiences Questionnaire (CSEQ). Pace's CSEQ included 14 qualities of effort scales that estimated the student's utilization of institutional resources (e.g., frequency of use in areas such as the library, experience with faculty, course learning, writing, student acquaintances, conversations, clubs and organization, etc.).

One of the five primary areas of the CSEQ focused on student engagement in the college environment. Many of the questions in Pace's CSEQ resembled CCSSE and NSSE questions (e.g., use of library, experience with faculty, course learning, writing, student acquaintances, conversations, clubs and organizations). Pace (1984) adapted the CSEQ from his earlier work with George Stern on institutional accountability. Earlier, Pace and Stern created the College and University Environment Scales for their research on institutional accountability.

W. G. Spady

Spady (1970, 1971) also made early theoretical contributions to student engagement. Similar to Tinto's (1975) article, but 5 years earlier, Spady (1970) compiled an early review of the literature on dropouts (retention) and presented his theory. Tinto's (1975, 1987) work drew on the earlier writings of Spady (1970).

Spady's (1970) model synthesizes concepts from balance theory, principles of Durkheim's (1951) theory of suicide, and information on college retention. Durkheim reported that the suicide rate is higher for people who are not socially integrated. Spady (1970) applied the principle of integration to college students. He provided a theoretical

rationale that examined both the academic and social systems of college and linked experiences prior to college with later academic and social outcomes. Spady (1970) reported that students who were most likely to drop out did not share the values or orientations of other students, did not socially interact with other students, and did not feel compatible with the overall social system of the college. In other words, students who failed to engage in the college's social environment (student engagement) were more likely to drop out.

Spady's (1970) initial work examined five factors associated with decisions to drop out of college. Those five areas were (a) grade performance, (b) intellectual development, (c) normative congruence, (d) friendship support, and (e) social integration. The first four factors of Spady's (1970) model influence the last factor of social integration. Spady (1970) also examined the areas of student satisfaction and institutional commitment. Principles from Spady's (1970) work are foundational for student engagement.

The following year, Spady (1971) applied his model to a longitudinal study of 683 undergraduates at the University of Chicago. (It should be noted that the profile of the University of Chicago and its students is quite different from the profile of many community colleges and their students in Illinois and other states.) As a result of that research, Spady (1971) made two major revisions to his theory. First, he added a separate component for structural relations and friendship support, and second, he modified the relationship between components in the model. Spady's (1970, 1971) work (e.g., the variables he examined) has contributed to student engagement.

Ernest T. Pascarella

Pascarella's work also has contributed to student engagement. Pascarella (1985) presented a general causal model for assessing the effects of differential environments on

student learning and cognitive development. Pascarella's (1985) model focused on both an institution's structural characteristics and its environment. He posited that student change is a result of a student's background characteristics, influences of peers and faculty, and student effort. He proposed that institutional effects have an indirect, rather than a direct effect, on students (Pascarella & Terenzini, 1991, 2005). The principles of Pascarella's (1985) theoretical work (e.g., student effort, student background characteristics, interaction with peers and faculty, institutional characteristics, enrollment) are foundational for student engagement.

Pascarella (1985) suggested that student growth is influenced by direct and indirect effects of five main sets of variables. Some of the sets of variable proposed by Pascarella influence other sets of variables. The five sets of variables included (a) student background/precollege traits (e.g., race/ethnicity, achievement, aptitude, aspirations, personality), (b) structural/organizational characteristics of institutions (e.g., enrollment, selectivity, faculty-student ration; percentage of residential students), (c) college or university environment, (d) frequency and content of student interaction with faculty and students, and (c) quality of student effort.

Chickering and Gameson

Although not considered theory by some, Chickering and Gamson's (1987) research on principles of good practice for undergraduate education have made significant contributions to higher education in general and specifically to student engagement. Their "seven principles" are well respected in higher education.

All seven good practices of Chickering and Gameson serve as important principles for student engagement. Based on the accumulation of years of research, Chickering and

Gameson (1987) synthesized seven principles that address good practices for undergraduate students: (a) good practices encourage student–faculty contact, (b) good practices encourage cooperation among students, (c) good practices encourage active learning, (d) good practices give prompt feedback, (e) good practices emphasize time on task, (f) good practices communicate high expectations, and (g) good practices respect diverse talents and ways of learning.

Select Literature Reviews Influencing Student Engagement

In addition to the contributions above, student engagement also has been influenced by a number of literature. The select literature reviews below were chosen for their early historical import and significant contribution to student engagement.

In 2000, Braxton (2000a) reported that “higher education research related to retention can be traced back over 70 years” (p. 1). In fact, as early as 1936, a 10-page article, “Attitude Difference Between College Classes: A Summary and Criticism,” was published in the *Journal of Educational Psychology*. In that publication, Stephen M. Corey summarized 17 studies between 1925 and 1935 that focused on the relationship between college students’ attitudes and education outcomes (primarily one outcome; Pascarella & Terenzini, 1991, p. 1). The content of that article illustrates that higher education has a long tradition of examining the relationship between student engagement and educational outcomes.

Other early reviews of student involvement that influenced student engagement include Philip Jacob’s (1957) *Changing Values in College*. In 1962, J. Summerskill’s publication *Dropouts from College* (1962) reviewed the attribution literature, attribution rates, and factors associated with dropping out and called for further research. Likewise, in 1969, Kenneth A. Feldman and Theodore Newcomb published *The Impact of College*

Students (1969), which reviewed more than 1,500 studies over four decades. Their publication examined the influence of institutional and other factors on college students (as with student engagement). Feldman and Newcomb's work was a forerunner to the comprehensive literature reviews of Pascarella and Terenzini (1991, 2005).

In his 1970 article, "Dropouts from Higher Education: An Interdisciplinary Review and Synthesis," Spady reviewed the literature on retention and proposed his theory. As reported earlier, two seminal works were published in 1975: Astin's book, *Preventing Students from Dropping Out*, and Tinto's article "Dropout from Higher Education: A Theoretical Synthesis of Recent Research." Astin's (1975) book, based on empirical evidence of examining such factors as financial aid, employment, residence, campus environment, college characteristics, and student–instructional interaction, identified the "who and whys" of freshman who are likely to drop out. Similar to Spady's (1970) earlier article, Tinto (1975) provided a review of retention literature and presented his theoretical framework.

Finally, the work of Pascarella and Terenzini (1991, 2005) made a significant contribution to higher education and student engagement. They examined how institutional factors affect college students, or stated another way, they examined the relationship between college students and the college environment. An understanding of institutional effects on college students is essential for creating, building, and maintaining student engagement. Volume one of Pascarella and Terenzini's (1991) work was based on about 2,600 studies. In volume two of their work, they examined three decades of literature. In Pascarella and Terenzini's (2005) second edition of their tome, their substantial chapter eight, "Educational Attainment and Persistence" (pp. 373–444), has specific application to student engagement.

Center for Community College Student Engagement

This section examines the influence and foundational contextual for the CCCSE and places this study in the context of CCSSE research. In addition, issues of the reliability and validity of the CCSSE are examined.

CCSSE and Student Engagement

Using the national CCSSE survey instrument from the CCCSE, this study examined student engagement variables and student characteristics as predictors of student academic achievement. The CCCSE can be viewed as a hub for the study of student engagement at community colleges.

According to the CCSSE “the Community College Survey of Student Engagement (CCSSE) is an assessment tool that provides information on student engagement, a key indicator of learning and, therefore, of the quality of community colleges” (CCSSE, n.d.a, para. 1). As the center’s name implies, student engagement is the central work of the CCCSE, which emphasizes that “student engagement, or the amount of time and energy that the students invest in meaningful educational practices, is the underlying foundation for CCSSE’s work” (CCSSE, 2009, p. 1). The relationship between student engagement and college success is clear. McClenney, Marti, and Adkins (2007) stated,

The findings from 20 years of research on undergraduate education have been unequivocal: The more actively engaged students are—with college faculty and staff, with other students, and with the subject matter they study—the more likely they are to learn, to stick with their studies, and to attain their educational goals. . . .The bottom line for community colleges: Student engagement matters. (p. 1)

Overview of CCSSE

The Community College Leadership Program in the College of Education at the University of Texas at Austin established the CCSSE in 2001. The Community College Survey for Student Engagement (CCSSE) changed its name in 2008 to the Center for Community College Student Engagement (CCCSE). It also moved its location in 2008.

The CCCSE is the home for the following national student engagement survey research projects on student engagement: the CCSSE; its companion survey, the Community College Faculty Survey of Student Engagement (piloted in 2004); the Survey of Entering Student Engagement (piloted in 2007); and the Community College Institutional Survey. CCSSE remains the flagship survey for the CCCSE.

Dr. Kay M. McClenney is the Director of the CCCSE. The center works in partnership with the NSSE at Indiana University, which examines student engagement at 4-year colleges and universities. The NSSE contributed to the establishment of the CCSSE. The two organizations continue to collaborate.

Oversight for CCCSE is provided by two national advisory groups: the National Advisory Board and the Technical Advisory Panel. The National Advisory board is chaired by Peter Ewell, vice president at the National Center for Higher Educational Management Systems. Other members on that board include Walter Bumphus, Gerardo de los Santos, Bernadine Chuck Fong, Edward L. Franklin, Rosemary Gillett-Karam, Alex Johnson, Christine Johnson, William Law, Byron McClenney, Kay McClenney, Alexander McCormick, John S. Nixon, Charlene Nunley, Daniel J. Phelan, Mary Spangler, Vincent Tinto, and Philip Uri Treisman. Members of the CCCSE's Technical Advisory Panel include Peter Ewell, Brock Grubb, Steve Head, Shanna Jaggars, Susan Johnson, Byron N.

McClenney, Kay McClenney Bill Law, John Lee, Nate Marti, and Derek Price. Dr. Larry Ebbers from Iowa State University served on a national advisory group for CCSSE.

Since 2001, major grants from the Kresge Foundation, Bill & Melinda Gates Foundation, Lumina Foundation for Education, Houston Endowment Inc., MetLife Foundation, and Pew Charitable Trusts have provided support for the work of the CCCSE. The CCCSE is cosponsored by the Carnegie Foundation for the Advancement of Teaching.

The CCCSE also is engaged in other research projects and initiatives such as Starting Right, Community College Connections, and Building Relationships for Student Success. In 2010, the CCCSE joined five other community college organizations in signing a commitment to boost student completion rates by 50% over the next decade. Additional signatories to that initiative included the AACC, the American Association of Community College Trustees (AACT), the League for Innovation in the Community College, the National Institute for Staff and Organization Development, and Phi Theta Kappa Honor Society.

In addition, Kay M. McClenney, Director of the CCCSE, is cochair of the Commission on the Future of Community Colleges. To support that work the AACC (2012) published *Reclaiming the American Dream: Community Colleges and the Nation's Future: A Report from the 21st Century Commission on the Future of Community Colleges*.

CCCSE Student Engagement Literature

The CCCSE has extensively researched and examined student engagement at community colleges. Its literature and research is well document on its website (CCCSE, n.d.a). For example, the website contains an annotated bibliography on the research that supports individual factors used in the CCCSE and contains research that has been conducted

on the reliability and validity of their CCSSE assessment instrument (see below, e.g., McClenney & Marti, 2006; McClenney et al., 2007). The CCCSE also is responsible for numerous publications including national publications, journal articles, newsletters (e.g., *Engagement Matters*, formerly *CCSSE Highlights*; *Talking SENSE*), bulletins (e.g., *CCSSE Bulletin*, sent to CCSSE institutional researchers, presidents, and college contacts), videos, and training material. In addition, research literature on community colleges is divided into the broad areas of assessment, benchmarking, colleges and their students, completion (see significance of the problem above), learning committees, student engagement, teaching and learning, undergraduate education, and retention. The website is a deposit for its reports, research, and other tools it has created (see *Recent Publications* from their website for their most current publications). The CCCSE also presents regional and state institutes and workshops on student engagement and other topics.

CCSSE 2012 Cohort

The following data from the national CCSSE 2012 cohort provide contextual information about the scope of student engagement conducted by the CCCSE. The 2012 CCSSE cohort surveyed 710 institutions from 48 states and the District of Columbia, four Canadian providences, Bermuda, and the Northern Marianas. Of those 710 institutions, 44.2%, $n = 314$) were small colleges ($\leq 4,499$ students), 26.3% ($n = 187$ were medium-sized colleges (4,500–7,999 students), 18.8% ($n = 134$) were large colleges (8,000–14,999 students), and 10.5% ($n = 75$) were extra-large colleges (15,000 or more students). In terms of location, 57.7% ($n = 410$) were classified as rural, and about equal numbers were suburban colleges (21.8%, $n = 155$ colleges) and urban colleges (20.4%, $n = 145$). In addition, almost equal numbers of the community colleges were from single campus colleges (44.3%, $n =$

315) and multicampus colleges (41.9%, $n = 298$), and 13.6% ($n = 97$) of colleges were from a multicampus system (e.g., Chicago).

The information from the 2012 CCSSE cohort revealed demographic trends in many of the nation's community colleges. In the 2012 cohort there were more female students (57%) than male students (42%) enrolled in community colleges, and 63% of students were traditional-age students (18–24 years of age). According to the 2012 CCSSE national cohort, 58% of the students were White and there were similar numbers of Hispanic/Latino/Spanish students (12%) and Black or African American students (11%). That cohort also contained 6% international students, 4% of Asian/Asian American or Pacific Islander students, and 4% of students classified as “other.” Two percent of students from the cohort were American Indian or other American.

CCSSE Instrument

The CCSSE is a paper-and-pencil survey of student engagement administered in college classrooms in the spring term (February through April). The survey is a random sample stratified by starting time of credit courses. The survey is designed to be completed in a 50-minute class session. There are 38 core questions in the CCSSE. Five standardized benchmarks are drawn from those 38 questions. The benchmarks are used to compare information nationally among community colleges. The five student engagement CCSSE benchmarks include (a) active and collaborative learning, (b) student effort, (c) academic challenge, (d) student–faculty interaction, and (e) support for learning. For comparative purposes, CCSSE benchmark scores have been standardized to a mean of 50.

CCSSE Reliability and Validity

The CCSSE (and NSSE) has been examined in regard to reliability and validity. Reliability and validity are essential in any scholarly research. The classic work, *Educational Measurement* (Brennan, 2006), is an excellent review of reliability and validity in education.

Reliability can be viewed as consistency, “sameness,” or “repeatability.” Under the same conditions, the same results should occur; if so, the findings are considered reliable. Sound research must examine reliability, and sound research findings must be reliable.

Validity reflects whether or not the findings truly represent what is being examined. A valid finding represents what is being studied. Sound research must examine validity and sound research findings must be valid. Findings can be reliable, though not valid. For example, a watch may be perfectly reliable (keep perfect time) although it is not a valid indicator of body temperature or weight.

Those designing the CCSSE drew from the experience and expertise of the NSSE. By design, many CCSSE questions are similar to NSSE questions (e.g., for possible comparative studies, etc.). A panel of technical experts helped create the CCSSE (and NSSE). In addition, CCSSE has an excellent annotated bibliography of research that underlies, undergirds, and supports the survey and variables in the survey.

Many studies have been conducted that examined the reliability and validity of both the CCSSE and NSSE. A major validation study by McClenney and Marti (2006) used a three-pronged approach that independently examined three separate CCSSE datasets. Later, Marti (2009) conducted a sizeable research project to test the validity and reliability of the

CCSSE. Recently there was a national discussion that included the reliability and validity issues of CCSSE.

McClenney and Marti (2006). A major validity study of student engagement at community colleges was conducted by McClenney and Marti in 2006 (McClenney et al., 2007). The research comprised three independent validation studies of CCSSE data. The study examined several long-term and short-term outcome variables including grade point average, credit completion, average credit hours, first-to-second term persistence, number of students enrolled per term, and graduation. It should be noted that the research this current study drew from used the outcome measures of grade point average and total credit hours.

The first validation study analyzed CCSSE data from Florida. That dataset was analyzed by the National Center for Higher Education Management Systems. The outcome variables were grade point average, degree completion, and completion of academic milestones. The findings from that study showed overall positive relationships between CCSSE data and those dependent variables.

The second study examined data from the national initiative, Achieving the Dream: Community College Counts. That dataset was examined by Derek Praxis of Praxis and Associates. The strongest findings from the study regarded cumulative grade point average, credit completion, and fall-to-fall retention. Other findings that were not as strong involved the areas of developmental math, reading, and writing along with college level algebra and English.

The last study focused on the relationship between the CCSSE and Hispanic Student Success data (and data from other related colleges). That dataset was analyzed by Greg

Smith, an independent consultant. That study showed that two CCSSE scales were the most predictive for student outcomes.

The overall findings from those three studies demonstrated support for the validity of CCSSE as a measure of student engagement. In addition, there was strong consistency between the engagement factors and outcome measures in all three studies. McClenney and Marti (2006) summarized the study by reporting, “Results from three studies validate CCSSE’s use of student engagement as a proxy for *student academic achievement* and persistence. CCSSE benchmarks consistently exhibited a positive relationship with outcome measures” (emphasis added, p. 5).

Marti (2009). Further research on the reliability and validity of student engagement was conducted by Marti (2009) via a pure confirmatory factor analysis (CFA). Overall, the findings from Marti’s research reported the student engagement constructs to be reliable and valid.

The two goals of that study were to empirically define the best fit of the model and to construct student engagement benchmarks of effective educational practice. Marti (2009) referred to his model as the model of effective educational practices (MEEP). The sample for Marti’s research was over 274,000 students. He used CFA to demonstrate that factor analysis models adequately represented the underlying constructs. CFA was used to confirm measurements of variance across gender, enrollment status (full time and part time), and year of administration (from the three years of data collection). The constructs from the study demonstrated reasonable internal reliability and test–retest reliability.

Grade point average was used as the outcome variable to measure the validity of the study (as with this study). The research revealed a consistently positive association between

grade point average and the engagement constructs. The study's results initially revealed a nine-factor solution that was reduced to a more useful number of five constructs (benchmarks).

Overall, the practice of student engagement has been subjected (repeatedly) to the public fires of scrutiny by the academy. Vigorous national discussions over various aspects of student engagement have taken place; CCSSE and NSSE were active in those interchanges.

Student Engagement National Discussion: *The Review of Higher Education* (2011 and 2012)

Relatively recently, there was a spirited national debate and robust discussion of student engagement that included measurement issues and addressed concerns of reliability and validity. In Fall 2011, *The Review of Higher Education* published "A Special Issue on Student Engagement," which was devoted to student engagement with a focus on the CCSSE and NSSE. In the Winter 2012 issue of *The Review of Higher Education*, Alexander C. McCormick, Director of NSSE at Indiana University, and Kay M. McClenney, Director of CCSSE at the University of Texas at Austin, wrote a professional, yet direct, response to some of the issues and concerns raised in the earlier publication.

One of the most provocative challenges from the 2011 issue of *The Review of Higher Education* was Stephen R. Porter's (2011) article entitled, "Do College Student Surveys Have Any Validity?" Not only was the topic provocative, but so was the analogy and research he used to illustrate his point. A challenge from McCormick and McClenney (2012) was that Porter was treating surveys as analogous to a test. It also was argued that Porter based his comments on a sample of one and then generalized his findings to a larger audience. In addition, to increase the accuracy of self-reported information, Porter's

suggested use of time-use dairies was challenged. Overall, challenges to Porter criticisms seemed to center on the fact that surveys are (admittedly) an imperfect measure tool and are used as a compromise between utility and the purity of scientific measurement.

Also in the 2011 issue, the validity of the CCSSE was challenged by Nora, Crisp, and Mathews (2011) and the validity of the NSSE was challenged by Campbell and Cabrera (2011). The validity of the CCSSE and NSSE benchmarks were challenged on the basis that the benchmarks are latent constructs. McCormick and McClenney (2012) debunked that criticism by reporting that the CCSSE and NSSE benchmarks are not latent constructs. To further their argument, McCormick and McClenney provided additional information regarding the formation of the benchmarks and referred to the Marti's (2009) validity and reliability study of student engagement.

Finally, in an article entitled "Theoretical Foundation and a Research Agenda to Validate Measures of Intercultural Effort," Dowd, Sawatzsky, and Korn (2011) argued that student engagement surveys fail to sufficiently measure "intercultural effort." The authors posited that student engagement surveys do not adequately measure the degree to which students experience institutional racism, racial bias, and discrimination in their college experience. The authors advocated for increased assessment (depth and breadth) of racial/ethnic discrimination. In response, McCormick and McClenney (2012) identified and highlighted areas where the CCSSE and NSSE currently address those areas. McCormick and McClenney also pointed out that college students face many additional areas of discrimination, such as on the basis of social class, religion, national origin, disability, etc., that also are significant.

National Survey of Student Engagement

Just as the CCCSE serves as a hub for student engagement for community colleges, the NSSE serves as a hub for the study of student engagement at 4-year colleges and universities. The NSSE is housed at Indiana University in the Center for Postsecondary Research and Planning and is directed by Alexander McCormick.

The NSSE was established in 1998. That year, the following individuals, influential in student engagement, were involved in the design of the NSSE: Alexander Astin, Gary Barnes, Arthur Chickering, Peter Ewell, John Gardner, George Kuh, Richard Light, Ted Marchese, and C. Robert Pace (see the earlier theory section in this chapter for more information regarding some of those individuals and their work). The original director of the NSSE was George Kuh, who was instrumental in the creation and establishment (and at times defense) of the NSSE. For a more complete history of NSSE, see its extensive website (NSSE, n.d.a) and its publication *Our Origins and Potential* (NSSE, 2001) and the *NSSE Timeline, 1998–2009; A Brief History of NSSE and Related Projects at the Indian University Center for Postsecondary Research* (NSSE, n.d.b). For additional information on NSSE (especially for early history) see the article “How Are We Doing at Engaging Students? Charles Schroeder talks to George Kuh” (Schroeder, 2003).

A total of 1,523 colleges and universities have participated in the NSSE since 2000. In 2012, 584 colleges and universities participated in the NSSE. In 2011, over a half a million students completed the NSSE (546,719 students) and approximately 3.2 million students have completed the NSSE since 2000. The NSSE survey was updated in 2013.

NSSE and CCSSE

The CCCSE and NSSE have a collaborative relationship, and there is a close working relationship between the two organizations. NSSE was involved in the planning of the CCSSE. In addition, there are national advisory board members on CCSSE from NSSE, and national advisory board members on NSSE from CCSSE. Between the CCSSE and NSSE, “there is intentional and substantial overlap in the content of the surveys” (CCCSE, n.d.b, para. 6).

NSSE Instrument

The NSSE survey instrument is administered online to first-year freshman and seniors at 4-year institutions (whereas the CCSSE is a paper-and-pencil survey administered in classrooms). The five student engagement NSSE benchmarks are based on 42 core questions (whereas CCSSE’s student engagement five benchmarks are based on 38 key questions). NSSE’s five benchmarks reflect participation in dozens of educationally purposeful activities. The five NSSE benchmarks are based on institutional requirements and the challenging nature of coursework, perceptions of the college environment, estimates of educational and personal growth since starting college, and background and demographic information.

Current Higher Education Context

This section provides information for the context of this study. This study focused on student engagement at community colleges. Therefore needed contextual and historical information for the study is presented for areas such as gender, age, race/ethnicity, enrollment, employment, and finances (e.g., tuition and fees).

The information from this study (i.e., 13 Illinois community colleges) is a component of Illinois higher education, and Illinois higher education is a component of postsecondary education in the United States. To provide pertinent background information and data, this section is divided into four sections: Illinois Community Colleges, Illinois Higher Education, National of Community Colleges, and National Profile of Postsecondary Education.

Profile of Illinois Community Colleges

This study examined data from 14 community colleges in Illinois. In total, there are 48 community colleges in Illinois. The information provided in this section regarding all community colleges in Illinois provides important context for this study.

The 48 community colleges in Illinois report to the Illinois Community College Board (ICCB). In turn, the ICCB reports to the Illinois Board of Higher Education (IBHE). Unless noted otherwise the information in this section was provided by the ICCB (2012a, 2012b, n.d.). Due to different sources of information, data may differ between ICCB and IBHE.

There are four official advisory groups to the ICCB: the Illinois President's Council, the Illinois Community College Trustees Association, the Illinois Community College Faculty Association, and the ICCB Student Advisory Committee. In relation to those state advisory groups, the author of this dissertation gained further interest in Illinois community colleges when he attended a state ICCB meeting of the Illinois President's Council and the Illinois Community College Trustees Association and had contact with a John Wood Community College (JWCC) student serving on the ICCB Student Advisory Committee. Through those activities, the author was also able to meet with all state senators and

representatives who represent the JWCC district in Quincy, Illinois. The JWCC district represents nine Illinois counties.

Illinois boasts of having the nation's "first community college," Joliet Junior College, founded in 1901. Illinois has the third largest community college system in the nation. The 48 Illinois community colleges are located in 39 community college districts. A single community college typically represents most of those community college districts, although there are seven community colleges in the City Colleges of Chicago district and four community colleges in the Illinois Eastern Community Colleges district. Illinois community colleges offer training for over 300 different careers and occupations. As reported below, in Illinois more freshmen and sophomore students attend community colleges than any other type of higher education institution.

Residency

One of the primary goals of community colleges is to increase accessibility to higher education (e.g., geographic, academic, financial). As shown in Table 2.1, 88.4% ($n = 329,394$) of students who attended Illinois community colleges in fall 2011 were in-district students. Just 9.2% ($n = 34,626$) of Illinois community college students in fall of 2011 were classified as out-of-district, an additional 0.76% ($n = 2,857$) were out-of-state students, and 0.59% ($n = 2,230$) were foreign students (ICCB, 2012b). In 2011 in Illinois, 3,459 (0.92%) students from state corrections enrolled in Illinois community colleges (there were no students enrolled from federal corrections). Partially due to the funding mechanism for community colleges, the residency pattern is quite different for community colleges than for 4-year colleges and universities.

Table 2.1

Illinois Community College Enrollment by Residency, 2011

Residency	Students	
	<i>n</i>	%
In-district	329,394	88.40
Out-of-district	34,626	9.20
Out-of-state	2,857	0.76
State corrections	3,459	0.92
Foreign students	2,230	0.59
Federal corrections	0	0.00
Total	372,566	99.87

Note. Adapted from *Data and Characteristics of the Illinois Public Community College System*, by Illinois Community College Board, 2012b, Table I-6.

Enrollment

This section examines Illinois community college enrollment by residency, credit and noncredit course enrollment, academic classification, full-time and part-time status, gender, student age, and race/ethnicity. Many students are afforded an opportunity for higher education at Illinois community colleges. Almost one million students (949,819; duplicate count) attended Illinois community colleges in fiscal year 2011 (see Table 2.2; ICCB, n.d.). The total enrollment numbers at Illinois community colleges includes students enrolled for both credit and noncredit. Overall, enrollment levels at Illinois community colleges have been relatively consistent for several years (2007: $n = 932,388$ students; 2008: $n = 933,640$; 2009: $n = 954,396$; 2010: $n = 985,010$; 2011: $n = 949,819$).

Credit versus noncredit. Illinois community colleges offer both credit and noncredit courses. The majority of students at Illinois community colleges enroll in courses for credit. In fiscal year (FY) 2007, a total of 684,964 (73.5%) students were enrolled for credit courses

(see Table 2.2; ICCB, 2012), whereas 247,424 (26.5%) were enrolled in noncredit courses; in 2008, 682,607 were enrolled for credit and 251,033 were enrolled for noncredit; in 2009, 700,072 were enrolled for credit and 254,324 were enrolled for noncredit; in 2010, 730,335 were enrolled for credit and 254,675 were enrolled for noncredit; in 2011, 716,979 (75.5%) were enrolled for credit and 233,022 (24.5% were enrolled for noncredit). The number of students enrolled in credit courses has increased in the past 5 years, whereas enrollment in noncredit courses has declined. In FY 2011 (similar to other years), a relatively small percentage (3.3%, $n = 31,213$) of students at Illinois community colleges were concurrently enrolled in both credit and noncredit courses.

Table 2.2

Illinois Community College Credit, Noncredit, and Total (Duplicate Count) Enrollment, 2007–2011

Year	Credit (n)	Noncredit (n)	Total (duplicate count)
2007	684,964	247,424	932,388
2008	682,607	251,033	933,640
2009	700,072	254,324	954,396
2010	730,335	254,675	985,010
2011	716,979	233,022	949,819

Note. Adapted from “Accountability and Performance Frequently Asked Questions,” *Studies and Reports*, Illinois Community College Board, n.d., “Overall, how many students graduate from Illinois community colleges?”

Academic classification. The vast majority of students at Illinois community colleges are freshmen. Many community colleges enroll about twice as many freshmen as sophomores. The large number of freshmen students and the much lower number of sophomore students at Illinois community colleges speaks to the need for student engagement and retention.

Almost half (48.2%, $n = 179,767$) of all Illinois community college students in fall 2011 were freshman, whereas the number of sophomore students ($n = 94,091$), 25.2% of all students, was about half the number of freshmen students (Table 2.3; ICCB, 2012). Another large portion (21.7%, 81,024) of students at Illinois community colleges was “unclassified.” According to the ICCB (2012, Table I-5), unclassified students are defined as students who do not meet minimum requirements for entrance as regular college-level students or already have an associate’s degree or higher and are taking courses at the same level or lower (e.g., reverse transfer). In addition, 14,575 (3.9%) students were dual enrolled (high school and community college enrollment), and 3,109 (0.8%) students were classified as in high school.

Table 2.3

Illinois Community College Enrollment by Academic Classification, Fall 2011

Academic classification	<i>n</i>	%
Freshman	179,767	48.20
Sophomore	94,091	25.20
Unclassified	81,024	21.70
Dual enrollment	14,575	3.90
High school students	3,109	0.80
Total	372,566	99.80

Note. Adapted from *Data and Characteristics of the Illinois Public Community College System*, by Illinois Community College Board, 2012b, Table I-5.

Full-time versus part-time status. Similar to most community colleges in the nation, and different from most 4-year colleges and universities (see later for additional discussion), most students who attended Illinois community colleges in fall 2011 were enrolled as part-time students. As shown in Table 2.4, 61.8% of the enrollment at Illinois community

colleges in 2011 ($n = 230,449$) were part-time students, whereas 38.1% ($n = 142,117$) were enrolled full time (ICCB, 2012b).

As has been noted, part-time students can present unique challenges for student engagement. Engagement and improved student academic achievement may increase if students are not significantly challenged by time and other constraints.

Table 2.4

Illinois Community College Enrollment by Full-Time and Part-Time Status

Enrollment	<i>n</i>	%
Part time	230,449	61.8
Full time	142,117	38.1
Total	372,566	99.9

Note. Adapted from *Data and Characteristics of the Illinois Public Community College System*, by Illinois Community College Board, 2012b, Table I-1.

Gender. As with most institutes of higher education, the number of females enrolled outnumbered the number of males. In fall 2011, the number of females students enrolled in Illinois community colleges ($n = 211,783$, 56.8%) outnumbered the number of male students ($n = 160,783$, 43.1%) by 51,000 (Table 2.5; ICCB, 2012b).

Table 2.5

Illinois Community Colleges Enrollment by Gender, Fall 2011

Gender	<i>n</i>	%
Female	211,783	56.8
Male	160,783	43.1
Total	372,566	99.9

Note. Adapted from *Data and Characteristics of the Illinois Public Community College System*, by Illinois Community College Board, 2012b, Table I-1.

Student age. In general, the average age of students at community colleges is higher than that of students at 4-year colleges and universities. The mean age for students at Illinois community colleges in fall 2011 was 28.1 years; the median age was 23.1 years (see Table 2.6; ICCB, 2012b). More specifically, in fall of 2011, 35.5% of students enrolled in Illinois community colleges ($n = 132,328$) were 17–20 years of age and 19.4% ($n = 72,630$) were 21–24 of age. Numbers and percentages of students in the next three older age groupings were similar to each other: 14.3% ($n = 53,627$) were 25–30 years of age, 12.5% ($n = 46,891$) were 31–39 years of age, and 12.1% ($n = 45,337$) were 40–55 years of age. In addition, 3.6% of students ($n = 13,550$) were over 55 years of age, 1.7% ($n = 6,554$) of students were 16 years of age or younger, and there were 0.4% ($n = 1,649$) of students whose age was unknown. These data show that 109,149 students, representing 42.5% of students at Illinois community colleges in fall of 2011, were 25 years of age or older. These numbers represent many older students with possibly unique student engagement challenges.

Table 2.6

Illinois Community College Enrollment by Age, Fall 2011

Age category (years)	<i>n</i>	%
16 or younger	6,554	1.7
17–20	132,328	35.5
21–24	72,630	19.4
25–30	53,627	14.3
31–39	46,891	12.5
40–55	45,337	12.1
Over age 55	13,550	3.6
Unknown	1,649	0.4
Total	372,556	99.5

Note. Adapted from *Data and Characteristics of the Illinois Public Community College System*, by Illinois Community College Board, 2012b, Table I-3.

Race/ethnicity. Community colleges typically serve a larger proportion of minority students than do 4-year colleges and universities. As shown in Table 2.7, just over half (56.3%, $n = 209,909$) of students at Illinois community colleges in fall 2011 were White, and slightly under half of students were minority students, nonresident aliens, or other/not identified (ICCB, 2012b). In support of the principle of increase access for all students, the numbers presented below illustrate that community colleges in Illinois (and other states) serve many minority students.

The number of Hispanic students ($n = 63,663$, 17.0%) and Black students ($n = 62,274$, 16.7%) enrolled in Illinois community colleges were very similar in fall 2011 (Table 2.7; ICCB, 2012b). In addition, 4.3% of students were Asian ($n = 16,292$), followed by 0.37% ($n = 1,410$) who were Native American Indian, 0.29% ($n = 1,091$) who were Pacific

Table 2.7

Illinois Community College Enrollment by Race/Ethnicity, Fall 2011

Race/ethnicity	<i>n</i>	%
White	209,909	56.3
Hispanic	63,663	17.0
Black	62,274	16.7
Asian	16,292	4.3
Native American Indian	1,410	0.37
Pacific Islander	1,091	0.29
Nonresident alien	796	0.21
Other/not identified	17,131	4.5
Total	372,566	99.67

Note. Adapted from *Data and Characteristics of the Illinois Public Community College System*, by Illinois Community College Board, 2012b, Table I-4.

Islanders, 0.21% ($n = 796$) who were nonresident aliens, and 4.5% ($n = 17,131$) who were identified as other or not identified.

Degrees and Certificates Awarded

Fiscal year 2011 was a record-breaking year at Illinois community colleges as 61,538 degrees and certificates were granted. The number of degrees and certificates conferred at Illinois community colleges in FY 2011 was 8.2% higher than in the previous year and 19.9% higher than in 2007 (ICCB, 2102a). Based on the number of degrees and certificates granted by the 48 Illinois community colleges in FY 2011 (compared to awards granted in the previous year) 32 colleges granted more awards, two colleges reported little or no change, and 14 colleges granted fewer awards.

Most degrees and certificates conferred at Illinois community colleges were granted to career and technical education students. The majority of those awards in FY 2011 (69.9%, $n = 43,048$), were career and technical education degrees or certificates, whereas 27.2% ($n = 16,750$) transfer degrees were awarded to baccalaureate/transfer students (Table 2.8; ICCB, 2012a). Over 80% of students who earned transfer degrees at Illinois community colleges in FY 2011 (80.3%) reported they enrolled to complete a bachelor degree.

The large number of certificates earned at community colleges reflects the fact that they often take less time to earn (e.g., less than a year) than do associate's degrees. For

Table 2.8

Illinois Community Colleges Degrees and Certificates Awarded, FY 2011

Type of award	<i>n</i>	%
Certificate	43,048	69.9
Associate's degree	16,750	27.2

Note. Adapted from *Annual Enrollment and Completions in the Illinois Community College System, Fiscal Year 2011* by Illinois Community College Board, 2012a, Table C-2.

example, of the degrees and certificates granted in career and technical education, 58.6% were career certificates taking less than one year to complete. The majority of baccalaureate/transfer degrees (59.0%) were Associate in Arts (AA) degrees.

Graduation Rates

This section provides information on Illinois community college graduation rates from 2006–2010: overall, by gender, and by student age.

Overall graduation rates, 2006–2010. The graduation rates at community colleges have not been stellar. Fewer than one in five students (19.4%) at Illinois community colleges in FY 2010 graduated (Table 2.9; ICCB, n.d.). In addition, the graduation rate at Illinois community colleges has been trending downward. As shown in Table 2.9, the graduation rates for the past 5 years were 21.3% in 2006, 20.6% in 2007, 20.6% in 2008, 19.6% in 2009, and 19.4% in 2010 (based on 150% of catalog time).

The graduation rate for Illinois community colleges is based on first-time, full-time students who graduate within 150% of catalog time (3 years for associate’s degrees).

Table 2.9

Illinois Community College Graduation Rates by Year, 2006–2010

Fiscal year	Graduation rate (%) (150% of catalog time)
2006	21.3
2007	20.6
2008	20.6
2009	19.6
2010	19.4

Note. Adapted from “Accountability and Performance Frequently Asked Questions,” *Studies and Reports*, Illinois Community College Board, n.d., “What is the graduation rate for Illinois community colleges?”

Recently, IPEDS also began collecting data on graduation rates at 200% of catalog time (4-year completion time for associate's degrees) for Illinois community colleges. It is not surprising that the number of graduates from Illinois community colleges is higher (although only slightly—about 4%—higher) when using the 200% of catalog timeline compared to using the 150% of catalog timeline.

Graduation rates by gender. Similar to overall enrollment rates for gender, female students earned the majority (56.7%) of degrees and certificates at Illinois community colleges in FY 2011 (Table 2.10; ICCB, 2012a). Career and technical education certificates (requiring less than 1 year) were the most common degree or certificate areas for both female students ($n = 13,054$) and male students ($n = 12,151$). Career, technical, vocational, and workforce education is a clear example of one of the many different foci of community colleges compared to most 4-year colleges and universities, which illustrates the need for different uses of student engagement strategies at community colleges.

Table 2.10

Illinois Community College Graduation Rates by Gender, FY 2011

Gender	%
Female	56.7
Male	43.3

Note. Adapted from *Annual Enrollment and Completions in the Illinois Community College System, Fiscal Year 2011* by Illinois Community College Board, 2012a, Table C-3.

Graduation rates and student age. Not surprisingly, the largest age group of graduates at Illinois community colleges in 2011 was the 21–24 years of age group. As shown in Table 2.11, 31.3% ($n = 19,232$) of graduates at Illinois community colleges in FY 2011 were 21–24 years old (ICCB, 2012a). Graduates in four age groups were represented in

similar numbers and percentages: age 25–30, 19.9% ($n = 12,252$); age 31–39, 16.4% ($n = 10,090$); age 40–55, 15.9% ($n = 9,769$); and under age 21, 13.6% ($n = 8,412$). In addition, 2.7% ($n = 1,683$) of graduates were over age 55 and the age of 0.16% ($n = 100$) of students was unknown.

Table 2.11

Illinois Community College Graduation Rates by Age, 2011

Age category (years)	<i>n</i>	%
<21	8,412	13.6
21–24	19,232	31.3
25–30	12,252	19.9
31–39	10,090	16.4
40–55	9,769	15.9
>55	1,683	2.7
Unknown age	100	0.16
Total	61,538	99.96

Note. Adapted from *Annual Enrollment and Completions in the Illinois Community College System, Fiscal Year 2011* by Illinois Community College Board, 2012a, Table C-5.

Retention Rates

Retention rates can be used as a measure of student engagement at colleges and universities. Unengaged students often are not retained. First-year retention rates are especially important because they can be used as a measure of a student's adjustment to college life. For that reason, retention rates after the first 2 weeks and after the first semester of college also are important indicators of student engagement. Overall, in FY 2011 about six in ten students returned or graduated the following fall from Illinois community colleges. The data revealed that the retention rates from 2007 to 2011 at Illinois community colleges were fairly consistently, around 60%.

The ICCB reports a retention rate and an adjusted retention rate. The retention rate includes only first-time, full-time students who re-enrolled the following fall, whereas the adjusted retention rate includes first-time, full-time students who re-enrolled the next fall and students who graduated during the intervening or returning year. Due to some certificate programs that can be completed within one year, the ICCB considers the adjusted retention rate more comprehensive, although there was little difference between the retention rate and the adjusted retention rate.

According to the adjusted retention rate reported by ICCB (n.d.), again about six of ten (60.6%, 21,110 out of 34,819) students returned to or graduated from Illinois community colleges in FY 2011 (Table 2.12). Adjusted retention rates were fairly consistent from 2007 to 2011: 2007, 60.6% ($n = 17,956$ of 29,643); 2008, 60.3% ($n = 17,477$ of 29,004); 2009, 60.5% ($n = 18,019$ of 29,770); 2010, 62.8% ($n = 19,157$ of 30,485); and 2011, 60.6% ($n = 21,110$ of 34,819).

Table 2.12

Illinois Community College Adjusted Retention Rate^a by Year, 2007–2011

Year	Retention rate (%)	Total enrollment (n)	Fall-to-fall enrollment (n)
2007	60.6	29,643	17,959
2008	60.3	29,004	17,477
2009	60.5	29,770	18,019
2010	62.8	30,485	19,157
2011	60.6	34,819	21,110

Note. Adapted from “Accountability and Performance Frequently Asked Questions: What is the retention rate for Illinois community colleges?,” *Studies and Reports*, Illinois Community College Board, n.d.

^aAdjusted retention rate is 200% of catalog time.

Tuition and Fees

It is well known that one of the greatest benefits of community colleges is the significant financial savings for the first two years of college compared to 4-year colleges and universities (especially at private institutions). Community colleges can offer quality education for the first two years of college at a much lower cost.

Students at Illinois community colleges (and most other community colleges) get a great “bang for their buck” compared to Illinois (and other) public universities and private universities. The average tuition and fees for in-district Illinois community colleges in FY 2012 (\$3,117) was about one fourth (27.6%) of the cost compared to Illinois public universities’ tuition and fees (\$11,265) and about one tenth (10.8%) the cost at private institutions (\$28,661; see Table 2.13; ICCB, n.d.). In other words, students who attended Illinois community colleges in FY 2012 saved, on average, \$8,148 a year compared to the tuition and fees at public institutions and \$25,544 a year compared to private institutions (based on full-time tuition and fees for 30 semester hours).

Although the cost of tuition and fees at Illinois community colleges is much less than at the state’s 4-year colleges and universities, those costs have been increasing at Illinois community colleges (as have the costs at 4-year colleges and universities). For example, the

Table 2.13

Illinois Higher Education Tuition and Fees by Institution Type, FY 2012

Institution	Tuition and fees (\$)
Community colleges	3,117
Public universities	11,265
Private institutions	28,661

Note. Adapted from “General Reports: Affordability: Tuition and Fees, FY2012,” *Studies and Reports*, Illinois Community College Board, n.d.

tuition and fees at Illinois community colleges for FY 2012 (\$3,117) increased by 5.7% from the previous year (\$2,948) and increased by 32.6%, from FY 2008 (\$2,351). The data clearly show overall increases in tuition and fees at Illinois community colleges for the last 5 years (see Table 2.14; ICCB, n.d.).

Table 2.14

Illinois Community College Tuition and Fees by Year, 2008–2012

Year	Community college tuition and fees (\$)
2008	2,351
2009	2,521
2010	2,666
2011	2,948
2012	3,117

Note. Adapted from “General Reports: Affordability: Tuition and Fees, FY2012,” *Studies and Reports*, Illinois Community College Board, n.d.

Community colleges in Illinois have experienced significant decreases in state funding. Decreases in state funding often result in increases in student tuition and fees. Increases in student tuition and fees challenge the principle of economic accessibility and affordability for community colleges.

In addition to increases in tuition and fees, there have been additional economic constraints on Illinois colleges and universities. For example, allocations from state resources for institutes of higher education in FY 2011 were at the same levels of as more than 10 years earlier (FY 1999). In addition, only a decade ago the Monetary Award Program (MAP) grant covered 100% of average Illinois tuition and fees. By comparison, for FY 2012 the maximum MAP grant covered less than half of those costs at public institutions. Furthermore, MAP grants have recently been exhausted earlier in the calendar year, which

can be detrimental for community colleges because many of those students wait until later in the year to solidify their college plans.

At \$11,265, the average cost of tuition and fees at Illinois universities in FY 2011 was 26.9% higher than the national average of \$8,244. In FY 2011, the average of tuition and fees at private institutions nationally (\$28,500) was about the same at Illinois private institutions (\$28,661).

Expenditures

Illinois community colleges are “big businesses” that generates “big dollars” for their local communities. The overall revenue generated by the 48 Illinois community colleges in FY 2011 was almost \$3 billion (\$2,989,732,489). The influx of revenue from those community college “economic engines” makes a significant contribution to local economies throughout Illinois.

The original funding formula for Illinois community colleges was one third of support from the state, one third from local taxes, and one third from student tuition and fees. The percentage of student tuition and fees, as a portion of total revenue, has increased substantially at many Illinois community colleges. The resulting financial reality is that many Illinois community colleges are becoming increasingly tuition driven. As with the federal government and other states, such as California, support for Illinois higher education is also challenged by other financial obligations such as significant and rapidly increasing debt. For example the state of Illinois has over \$100 billion of unfunded liabilities and other obligations (e.g., state retirement funds), which has resulted in the lowering of bond ratings which ultimately has resulted in less state support for higher education. The decrease in funding (or uncertain late payments) often has resulted in increased student tuition and fees, borrowing of money by Illinois community colleges, and budgetary planning uncertainties.

Increasingly high student tuition and fees is contrary to the principle of community colleges being economically accessible for students.

Profile of Illinois Higher Education

Illinois community colleges are a component of Illinois higher education overall. This section provides context for this study with a profile of all Illinois higher education

Illinois Board of Higher Education

Over half a century ago, in 1961, the Illinois General Assembly and Governor Otto Kerner created the IBHE. The IBHE was charged with the oversight of higher education in Illinois and reporting to the governor and Illinois General Assembly. The IBHE is responsible for the state's higher education budget, fiscal affairs, grants, administration, institutional approval, program approval, information systems, master planning, and policy development.

In 2010, the IBHE was responsible for almost 1 million ($n = 924,751$) Illinois higher education students, a budget of over \$3.1 billion, and oversight of 224 public and private colleges and universities. Although the IBHE uses the nomenclature “independent (private) for-profit institutions” and “independent (private) not for-profit institutions,” for consistency the terms “private for-profit” and “private not-for-profit” institutions are used here.

Enrollment

This section examines Illinois higher education enrollment by institution type and by student academic level, full-time and part-time status, gender, age, and race/ ethnicity. In Illinois, more students attend community colleges than any other type of higher education institution (IBHE, n.d.). In 2010, of the 224 colleges and universities in Illinois, 12 institutions were public universities, 48 were community colleges, 99 were private not for-profit institutions, 31 were private for-profit institutions, and 34 were out-of-state institutions

Table 2.15; IBHE, n.d.). Of all students enrolled in higher education in Illinois in 2010, by a large margin the data show that the majority of students (41.0%) were enrolled in community colleges ($n = 379,736$), whereas 24.9% ($n = 230,384$) were enrolled in private not-for-profit 4-year institutions, 22.1% ($n = 205,023$) in public universities, 9.9% ($n = 91,797$) in private for-profit 4-year institutions, and only 1.9% ($n = 17,811$) in out-of-state-institutions.

Table 2.15

Illinois Higher Education Enrollment by Institution Type, 2010

Institution type	<i>n</i>	%
Community college ($n = 48$)	379,736	41.0
Private not-for-profit ($n = 99$)	230,384	24.9
Public university ($n = 12$)	205,023	22.1
Private for-profit ($n = 31$)	91,797	9.9
Out-of-state ($n = 34$)	17,811	1.9
Total ($n = 224$)	924,751	99.8

Note. Adapted from *Illinois Education Enrollment & Degrees System*, Illinois Board of Higher Education, n.d., Copyright 2011.

Statewide enrollment and academic level. In Illinois higher education in 2010, more students were classified as freshmen than any other classification (IBHE, n.d.). Of the 658,662 undergraduate students in Illinois in 2010, almost half (44.5%, $n = 293,164$) were classified as freshmen (Table 2.16). The number of sophomores (23.1%, $n = 152,182$) was almost half of the number of freshmen, and likewise, the number of juniors was almost half that of sophomores (11.8%, $n = 78,242$). The number of seniors (14.3%, 94,590) was slightly higher than the count for juniors, and 6.1% ($n = 40,482$) of students were unclassified.

Table 2.16

Illinois Higher Education Enrollment by Academic Level, Fall 2010

Academic level	<i>n</i>	%
Freshman	293,164	44.5
Sophomore	152,182	23.1
Junior	78,242	11.8
Senior	94,590	14.3
Unclassified	40,482	6.1
Total	658,660	99.8

Note. Adapted from *Illinois education enrollment & degrees system*, Illinois Board of Higher Education, n.d., Copyright 2011.

Statewide academic classification by institution type. In 2010, Illinois community colleges enrolled 55.7% of all freshmen and 53.7% of all sophomores, whereas the state's public universities enrolled 47.9% of all juniors and 52.5% of all seniors (Table 2.17; IBHE, n.d.). By comparison, the state's 12 public institutions accounted for the enrollment of only 12.3% ($n = 36,078$) of the state's freshmen. Because community colleges provide only the first 2 years of a college education, it is not surprising that the enrollment of freshmen and sophomores were strongly represented at those institutions.

Although in 2010 Illinois community colleges enrolled over half of all freshmen (55.7%) and sophomores (53.7%), the total number of freshmen ($n = 163,184$) was more than twice the total number of sophomores ($n = 81,677$). These data show the dramatic decrease of sophomores compared to freshmen, which helps to illustrate the need for student engagement at Illinois community colleges (and other institutions of higher education).

In addition to the large number of freshmen and sophomores enrolled in 2010 at Illinois community colleges, they also enrolled the entirety of the state's students classified as precollegiate (100%, $n = 39,699$) and continuing education students (100%, $n = 62,687$)

Table 2.17

Illinois Higher Education Enrollment by Institution Type and Academic Classification, Fall 2010

Classification	Community college		Public university		Private not-for-profit		Private for-profit		Out-of-state	
	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>
Precollegiate	100.0	39,699	0.0	0	0.0	0	0.0	0	0.0	0
Continuing education	100.0	62,687	0.0	0	0.0	0	0.0	0	0.0	0
Unclassified	80.3	32,489	3.9	1,591	8.8	3,566	6.9	2,796	0.1	40
Freshman	55.7	163,184	12.3	36,078	12.8	37,615	17.9	52,423	1.3	3,864
Sophomore	53.7	81,677	18.4	28,015	19.0	28,846	7.7	11,771	1.2	1,873
Junior	0.0	0	47.9	37,475	39.7	31,041	9.8	7,676	2.6	2,050
Senior	0.0	0	52.5	49,636	39.3	37,173	4.9	4,651	3.3	3,130

Note. Adapted from *Illinois education enrollment & degrees system*, Illinois Board of Higher Education, n.d. Copyright 2011.

which combined, accounted for more than 100,000 students ($n = 102,386$). Furthermore, Illinois community colleges enrolled 80.3% ($n = 32,489$) of unclassified students.

Although in 2010 more than half of freshmen and sophomores in Illinois were enrolled in community colleges (freshmen, 55.7%, $n = 163,164$; sophomores, 53.7%, $n = 81,677$), other types of institutions in Illinois showed a much different picture. At other types of institutions of higher education there were much smaller levels of enrollment of freshmen and sophomores at public institutions (freshmen, 12.3%, $n = 36,078$; sophomores, 18.4%, $n = 28,015$); private not for-profit institutions (freshmen = 12.8%, 37,615; sophomores = 19.0%, 28,864); and private for-profit institutions (freshmen, 17.9%, $n = 52,423$; sophomores, 7.7%, $n = 11,771$), which showed an even sharper decrease for sophomores.

Although the percentages of freshman and sophomores in 2010 remained fairly constant, the decrease in the raw numbers between freshman and sophomore enrollment were dramatic at some institutions. Dramatic decreases in the number of sophomore students compared to freshman could strongly indicate problems of student retention and student engagement. For example, there were 50.0% fewer sophomore students ($n = 81,677$) as there were freshman students ($n = 163,184$) at community colleges—a difference/loss of over 80,000 students (Table 2.17; IBHE, n.d.). Even more dramatic, the data from private for-profit institutions show a precipitous drop of more than 40,000 fewer sophomore students ($n = 11,771$) compared to freshman students at (52,423); the sophomore class ($n = 11,771$) was 77.5% smaller than the freshman class ($n = 52,423$). Likewise, the number of sophomores was only 56.5% of the number of freshman at out-of-state institutions. Finally, there was a 23.3% decrease in sophomore students ($n = 28,846$) compared to freshman students ($n = 37,615$) at independent not-for-profit institutions. The dramatic decreases in the number of

sophomores compared to freshman at community colleges (50.0% fewer sophomores), independent for-profit institutions (77.5% fewer sophomores), and out-of-state institutions (56.5% fewer sophomores) should be of concern for issues of student retention and student engagement.

In 2010, almost 90% of juniors and seniors at Illinois institutions of higher education were enrolled in the public institutions and private not-for-profit institutions (Table 2.17; IBHE, n.d.). Of the seniors, 52.5% ($n = 49,636$) were enrolled in public institutions and 39.3% ($n = 37,173$) were enrolled in not-for-profit institutions. Likewise, almost half of juniors were enrolled in public institutions and 39.7% ($n = 31,041$) were enrolled in private not-for-profit institutions.

As noted earlier, in 2101, the number of sophomores was about half the number of freshmen, and the numbers of juniors and seniors each was about half the number of sophomores. A significant principle of student engagement is the importance of engaging students early (especially in the first 2 weeks of class). The data show that many higher education students are not retained after their first year, demonstrating the importance of student retention and engagement for new students. These data also are especially significant for and provide evidence of the need for student engagement and student retention at community colleges.

Full-time versus part-time enrollment status. Full-time and part-time enrollment status varied greatly by type of Illinois higher education institutions. The data reported by IBHE (n.d.) show differences in full-time and part-time enrollment patterns at community colleges compared to other Illinois colleges and universities (Table 2.18). For example, the percentage of students enrolled part time at community colleges was different than for all

Table 2.18

Illinois Higher Education Enrollment by Institution Type and Full-Time and Part-Time Status, 2010

Institution type	Student enrollment status (%)	
	Full time	Part time
Community colleges ($n = 48$)	39.8	60.2
Public universities ($n = 12$)	78.8	21.2
Private not-for-profit ($n = 99$)	73.6	26.4
Out-of-state ($n = 34$)	58.3	41.7
Private for-profit ($n = 31$)	56.0	44.0

Note. Adapted from *Illinois education enrollment & degrees system*, Illinois Board of Higher Education, n.d., Copyright 2011.

other types of colleges and universities in Illinois; community colleges were the only higher education institution type in Illinois in which the majority of students were enrolled part time. As a comparison, the rate of full-time enrollment at the state's public 4-year institutions was almost 78.8%, whereas the rate of full-time enrollment at community colleges was about half of that, 39.8%. Students who are enrolled part time face different and often greater student engagement challenges than do students who are enrolled full time; and community colleges have many students enrolled part time.

Gender. Consistent with female and male student enrollment patterns in higher education generally, female students outnumbered male students at all Illinois colleges and universities in 2010. Overall that year, 56.6% of enrolled students were female ($n = 523,638$) compared to 43.3% of enrolled students who were male ($n = 401,113$), a difference of 122,525 in the number of female versus male students enrolled in Illinois institutions of higher education (Table 2.19; IBHE, n.d.).

Table 2.19

Illinois Higher Education Enrollment by Gender, 2010

Gender	<i>n</i>	%
Female	523,638	56.6
Male	401,113	43.4
Total	924,751	100.0

Note. Adapted from *Illinois education enrollment & degrees system*, Illinois Board of Higher Education, n.d., Copyright 2011.

The overall ratio for female and male students enrolled was similar at different types of Illinois institutions of higher education in 2010 (Table 2.20; IBHE, n.d.): public institutions, female = 53.1%, ($n = 108,883$), males = 46.8% ($n = 96,140$); community colleges, females = 56.7% ($n = 215,476$), males = 43.2% ($n = 164,260$); private not-for-profit institutions, female = 57.8% ($n = 131,856$), males = 42.1% ($n = 96,093$); and private for-profit institutions, females = 58.6% ($n = 53,864$), males = 41.3% ($n = 37,933$). More than two-thirds of students in Illinois higher education in 2010 enrolled in out-of-state institutions were female (66.9%, $n = 13,559$ —the highest rate), whereas 33.0% ($n = 6,687$) were male.

Student age. In Illinois in 2010, 51.0% of individuals age 18–19 were enrolled in postsecondary education and 44.7% of individuals age 20–24 were enrolled in postsecondary education, whereas only 13.0% of those age 25–34 were enrolled in postsecondary education (Table 2.20; Snyder & Dillow, 2012). Not surprising, the data showed that the percentage of students in higher education was inversely related to age (i.e., fewer older individuals were students). Overall, the average age of students enrolled in community colleges tends to be older than the average age of students enrolled in 4-year institutions, which may necessitate different student engagement strategies for older students.

Table 2.20

Illinois Higher Education Enrollment by Age, 2010

Age (years)	%
18–19 ^a	51.0
20–24	44.7
25–34	13.0

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, p. 122.

^aSome 18 year olds were still in high school.

Race/ethnicity. Of the almost 1 million students ($n = 924,751$) who enrolled in Illinois colleges and universities in 2010, the 60.4% ($n = 518,443$) were classified as White; students of color and nonresident aliens comprised the remaining 44.0% of the student population, broken down as follows (Table 2.21; Snyder & Dillow, 2012): Black, 15.7% ($n = 135,285$); Hispanic, 12.9% ($n = 110,974$); Asian, 5.4% ($n = 46,409$); non-resident alien, 3.5%

Table 2.21

Illinois Higher Education Enrollment by Race/Ethnicity, 2010

Race/ethnicity	<i>n</i>	%
White	518,443	60.4
Black	135,285	15.7
Hispanic	110,974	12.9
Asian	46,409	5.4
Nonresident alien	30,079	3.5
Two or more races	11,342	1.3
American Indian	2,825	0.32
Native Hawaiian/Pacific Islander	2,216	0.25
Total	857,573	99.77

Note. Adapted from *Illinois education enrollment & degrees system*, by Illinois Board of Higher Education, n.d., Copyright 2011.

($n = 30,079$); two or more races, 1.3% ($n = 11,342$); Native American Indian, 0.32% ($n = 2,825$); and Native Hawaiian/Pacific Islander, 0.25% ($n = 2,216$). Illinois (and other states) passed the Achieve the Development, Relief, and Education for Alien Minors Act (DREAM), which may result in a possible increase in nonresident alien students.

Degrees and Certificates Awarded

Almost 200,000 ($n = 195,549$) higher educational awards (e.g., degree, certificates) were awarded to students in Illinois in 2010 (Table 2.22; Snyder & Dillow, 2012). Of those awards, 19.6% ($n = 38,451$) earned associate's degrees and another 16.9% ($n = 33,080$) of students earned certificates. An additional 37.3% ($n = 72,407$) of the awards were bachelor's degrees, 21.9% ($n = 42,989$) were master's degrees, 3.9% ($n = 7,636$) of students earned doctorates, and 986 students (0.5%) earned advanced certificates. Of the 7,636 total doctorates conferred in 2010, 65.2% ($n = 4,981$) were doctoral professional degrees, 33.5% ($n = 2,565$) were awarded in doctoral research, and 1.1% students ($n = 90$) were classified as doctoral "other."

Table 2.22

Illinois Higher Education Degrees and Certificates Awarded, 2010

Type of degree/certificate	<i>n</i>	%
Certificate	33,080	16.9
Associate's	38,451	19.6
Bachelor's	72,407	37.3
Master's	42,989	21.9
Doctorate	7,636	3.9
Advanced degree	986	0.5
Total	195,549	100.1

Note. Adapted from *Illinois education enrollment & degrees system*, by Illinois Board of Higher Education, n.d., Copyright 2011.

Degrees and certificates awarded by institution type. As shown in Table 2.23, 29% of the awards conferred in Illinois in 2010 were granted by community colleges. Of the 195,549 degrees awarded in Illinois in 2010, 32.7% ($n = 64,000$) were awarded by independent private not for-profit institutions, slightly fewer (29.0%, $n = 56,884$) degrees and awards were conferred by community colleges, and 25.4% ($n = 49,684$) of awards were granted the 12 public universities (Snyder & Dillow, 2012). These three types of institutions accounted for almost 87.1% of the degrees conferred in Illinois in 2010. The remaining degrees were awarded by independent private for-profit institutions (10.5%, $n = 20,593$) and out-of-state institutions (2.2%, $n = 4,388$).

Table 2.23

Illinois Higher Education Degrees and Certificates Conferred by Institution Type, 2010

Type of degree/certificate	<i>n</i>	%
Private not-for-profit ($n = 99$)	64,000	32.7
Community college ($n = 48$)	56,884	29.0
Public institution ($n = 12$)	49,684	25.4
Private for-profit ($n = 31$)	20,593	10.5
Out-of-state ($n = 34$)	4,388	2.2
Total	195,549	99.8

Note. Adapted from *Illinois education enrollment & degrees system*, by Illinois Board of Higher Education, n.d. Copyright 2011.

Allocations

The state of Illinois in 2010 allocated much more money to its 12 public universities than to its 48 community colleges (IBHE, n.d.). In Illinois for FY 2011, \$1.3 billion (62.1% of the total state allocation for higher education) was allocated for universities and \$307.3 million (14.8%) was allocated for community colleges (Table 2.24). In other words, the

Table 2.24

Illinois Higher Education Total Allocations by Institution Type, 2010

Institution type	\$	% ^a
Public universities	1.300 billion	62.1
Community colleges	0.307 billion	14.8

Note. Adapted from *Illinois education enrollment & degrees system*, by Illinois Board of Higher Education, n.d. Copyright 2011.

^aPercentage of total state funding for higher education.

state's 12 public universities, with 22.1% of the state's total enrollment, received 62.1% of the total state funding for higher education, whereas the 48 community colleges, with 41.0% of the state's total enrollment (and over half of the state's freshmen and sophomores), received only 14.8% of state funding for higher education.

Profile of Community Colleges Nationally

Community colleges are uniquely American. Other labels and descriptors of community colleges included the “people’s college” and the “democracy college.”

Community colleges serve a unique need in the American higher educational landscape.

This section provides a national profile on community colleges and student engagement, an important context for this study.

From 1901–2001, during the first 100 years of community colleges’ existence, more than 100 million students attended community colleges. Today, community colleges are the fastest growing sector of U.S. higher education. There are approximately 1,200 community colleges in the nation with an enrollment of more than 13 million students representing almost half (46%) of all U.S. undergraduates. In some states, such as Illinois, community college enrollees represent almost two-thirds of all undergraduates. Other states, such as California and Texas, also have large enrollments of community college students.

American Association of Community Colleges

The AACC is the primary advocacy organization for the nation's 2-year associate's degree-granting institutions. The AACC was founded in 1920; the name of the organization has changed several times. There are six AACC regions in the United States (Illinois and Iowa are in Region IV). The six regional accrediting bodies are the Midwest States Association of Colleges and Schools, New England Association of Schools and Colleges, North Central Association of Colleges and Schools, Northwest Association of Schools and Colleges, Southern Association of Colleges and Schools, and Western Association of Schools and Colleges.

Unless noted otherwise national information on community colleges in this section was taken from the AACC (2012). The data from the AACC is not as complete, in-depth, or recent as information from National Center for Educational Statistics (NCES) or from the Illinois Board of Higher Education (IBHE). In addition, demographic information may differ between AACC and NCES because the data may have originated from different sources, and the dates for some data were not available.

Community College Locations

Student engagement challenges for community college students can vary by geographical location. One would expect that the needs for student engagement at rural community colleges (e.g., perhaps with a focus on agriculture) may differ from students who were enrolled in community colleges in large urban cities. The varying and many locations of community colleges emphasize the “community” aspect of community colleges.

One goal of community colleges is geographic accessibility (as opposed to students having to leave their communities and travel long distances to attend “State U.”). By design,

community colleges have been placed “where the people are” (hence the name people’s college), and, nationwide, most students are enrolled in community colleges in or near large population bases (i.e., putting colleges where the people reside). In the year 2000, IPEDS (as cited in AACC, n.d.) reported that over three-quarters of community college students were enrolled in colleges in a mid-sized city (28%), on the fringe of a large city (27%), or in a large city (23%; see Table 2.25). The remaining students were enrolled in community colleges in small towns (11%), on the fringe of mid-sized cities (5%), in rural settings (4%), and in large towns (3%).

Table 2.25

Nationwide Community Colleges by Location

Location	%
Mid-sized city	28
Fringe of a large city	27
Large city	23
Small town	11
Fringe of mid-sized city	5
Rural setting	4
Large town	3

Note. Adapted from *Institutional Characteristics of Community Colleges*, by American Association of Community Colleges, n.d.

Enrollment

This section examines national enrollment at community colleges by size of institution; credit versus noncredit course enrollment; full-time versus part-time enrollment; level of instruction, gender; student age; race/ethnicity; minority students; and student employment. Many of these student characteristics are examined in this study.

Size of institution. Overall, it has been shown that, in general, students are more engaged at smaller institutions of higher education. Therefore, the size of an institution can be an important variable in student engagement.

The overall pattern of enrollment by size of community college generally represents an inverted bell curve (skewed toward smaller colleges), with higher enrollment numbers for larger and smaller colleges and smaller enrollment numbers for medium-sized colleges. As reported by IPEDS in 2000 (as cited in AACC, n.d.; see Table 2.26), 25% of students at community colleges were enrolled in colleges with 1,000 students or less, 14% of students were enrolled in community colleges with 1,001–1,999 students, 11% at colleges with 2,001–2,999 students; 9% at colleges with 3,001–3,999 students; 8% at colleges with 4,001–4,999 students, 18% at colleges with 5,001–9,999 students, and 14% at colleges with 10,000 students or more. Therefore, half (50%) of community college students were enrolled in a college with fewer than 3,000 students, and about a third (32.0%) of students at community colleges were enrolled in a college with more than 5,000 students.

Table 2.26

Nationwide Community College Enrollment by Institution Size

Size of community college	%
≤1,000	25
1,001–1,999	14
2,001–2,999	11
3,001–3,999	9
4,001–4,999	8
5,001–9,999	18
≥10,000	14

Note. Adapted from *Institutional Characteristics of Community Colleges*, by American Association of Community Colleges, n.d.

Credit versus noncredit enrollment. A significant difference between community colleges and 4-year institutions is that community colleges offer many more noncredit courses. Noncredit courses may include such courses as developmental educational courses and personal interest/community education courses. Nationally in 2009, the majority of students at community colleges were enrolled in credit courses (61.5%, $n = 8$ million students), whereas 38.5% ($n = 5$ million students) of community college students were enrolled in noncredit courses (AACC, n.d.; Table 2.27).

Table 2.27

Nationwide Community College Enrollment, Credit Versus Noncredit, 2009

Enrollment type	n	%
Credit	8 million	61.5
Noncredit	5 million	38.5
Total	13 million	100.0

Note. Adapted from *Institutional Characteristics of Community Colleges*, by American Association of Community Colleges, n.d.

Full-time versus part-time status. The literature indicated that students who are enrolled full time are generally more engaged than are students who are enrolled part time. It also is clear that, although the majority of students at 4-year institutions are enrolled full time, the majority of students enrolled in community colleges are enrolled part time. In 2009, 59% of students at community colleges nationally were enrolled part time ($n = 7.54$ million), whereas about 41% students at community colleges ($n = 5.46$ million) were enrolled full time (AACC, n.d.; Table 2.28). Students enrolled part time often face unique student engagement challenges.

Table 2.28

Nationwide Community College Enrollment by Full-Time or Part-Time Status, 2009

Enrollment status	<i>n</i>	%
Part time	7.54 million	59
Full time	5.46 million	41
Total	13.00 million	100

Note. Adapted from *Reclaiming the American Dream, Community Colleges and the Nation's Future, A Report from the 21st Century Commission on the Future of Community Colleges*, by American Association of Community Colleges, 2012, p. 8. Copyright 2012 by American Association of Community Colleges.

Level of instruction. Student engagement is especially important for new/first-time and undergraduate college students. Many first-time freshmen and undergraduate students enroll at community colleges. By design, community colleges provide the first 2 years of higher education. Nationally, in 2009, 43% of first-time freshmen were enrolled in community colleges and 44% of all undergraduates (freshman and sophomores) were enrolled in community colleges (AACC, n.d.). First-time freshmen and new students often need an adjustment and acclimation period. Student engagement can help with the adjustment to community college (and other higher education institutions), especially for new/first-time students.

Gender. Student engagement issues for students in higher education can vary depending on a student's obligations and responsibilities (although over the past few decades gender roles have changed, female students still may have significantly more dependent care and other family responsibilities than male students do). As shown in Table 2.29, nationally in 2009, female students comprised 61% of students at community colleges whereas male students represented 39% of students (AACC, n.d.; Table 2.29). The ratio of more female

Table 2.29

Nationwide Community College Enrollment by Gender, 2009

Gender	%
Female	61
Male	39

Note. Adapted from *Reclaiming the American Dream, Community Colleges and the Nation's Future, A Report from the 21st Century Commission on the Future of Community Colleges*, by American Association of Community Colleges, 2012, p. 8. Copyright 2012 by American Association of Community Colleges.

than male students at community colleges (and other higher education institutions) has been consistent for many years.

Student age. Students of different ages may have different student engagement challenges. For example, there may be different engagement issues for students who are 18 years old, just coming from high school, than for older students who may have more life experiences and obligations.

The average age of community college students is older than the average age of students at 4-year institutions. Nationally in 2009, the average age for community college students was 28 years and the median age was 23 years (≤ 21 years = 39%; 22–39 years = 45%; 40+ years = 15% (AACC, n.d.). There were somewhat similar numbers of community college students, about four in ten, in the age groups of age 21 years or younger (39%) and 22–39 years (45%), but there were more community college students age 22 to 39 years than age 21 or younger (Table 2.30). A sizable number of students at community colleges (15%) were 40 years of age or older. Clearly, many older students are enrolled in community colleges, resulting in unique student engagement issues.

Table 2.30

Nationwide Community College Enrollment by Age, 2009

Median age	%
≤21 years	39
22–39 years	45
40+ years	15

Note. Adapted from *Reclaiming the American Dream, Community Colleges and the Nation's Future, A Report from the 21st Century Commission on the Future of Community Colleges*, by American Association of Community Colleges, 2012, p. 8. Copyright 2012 by American Association of Community Colleges.

Race/ethnicity. Community colleges enroll a higher percentage of minority students than do 4-year institutions. At community colleges nationally in 2009, White students accounted for slightly more than half of community college students (54%) followed by about equal percentages of Hispanic students (16%) and Black students (14%). Community colleges also enrolled 6% Asian/Pacific Islanders students, 1% Native American students, and 10% of students who were identified as other/unknown (AACC, n.d.; Table 2.31). The enrollment of community college students varies considerably by different racial/ethnicity categories depending on geographic location.

As reported above, the data make it clear that a large proportion of students enrolled in community colleges are minority (non-White) students. The data also show that a disproportionate percentage of non-White students enrolled in higher education are enrolled in community colleges versus other types of institutions (AACC, n.d.). In 2009, over half of the nation's Native American undergraduate students (54%) and Hispanic undergraduate students (51%) were enrolled in community colleges (Table 2.32). Similarly, 45% of all Asian/Pacific Islander undergraduate students and 44% of all Black undergraduate students

Table 2.31

Nationwide Community College Enrollment by Race/Ethnicity, 2009

Race/Ethnicity	%
White	54
Hispanic	16
Black	14
Asian/Pacific Islander	6
Native American	1
Other/not identified	10

Note. Adapted from *Reclaiming the American Dream, Community Colleges and the Nation's Future, A Report from the 21st Century Commission on the Future of Community Colleges*, by American Association of Community Colleges, 2012, p. 8. Copyright 2012 by American Association of Community Colleges.

Table 2.32

Nationwide Representation of Race/Ethnicity of Community College Students Among All Undergraduates, 2009

Race/ethnicity	%
Native American	54
Hispanic	51
Asian/Pacific Islander	45
Black	44

Note. Adapted from *Reclaiming the American Dream, Community Colleges and the Nation's Future, A Report from the 21st Century Commission on the Future of Community Colleges*, by American Association of Community Colleges, 2012, p. 8. Copyright 2012 by American Association of Community Colleges.

are enrolled in community colleges. Clearly, community colleges serve many of the nation's minority undergraduate students.

Student employment. Student employment can be a major challenge to student engagement. In general, the more hours students are employed the less time they have to engage in academic pursuits.

Nationally, most community college students were employed, and many of them were employed full time (AACC, n.d.). In 2007–2008, 59% of community college students who were enrolled full time also were employed part time (Table 2.33). Another 21% of community college students enrolled full time was employed full time. Therefore, 80% community college students who were enrolled full time also were employed.

Table 2.33

Nationwide Community College Full-Time and Part-Time Enrollment by Full-Time and Part-Time Employment, 2007–2008

Employment	Enrollment	
	Full time (%)	Part time (%)
Full time	59	40
Part time	21	47
Total	80	87

Note. Adapted from *Reclaiming the American Dream, Community Colleges and the Nation's Future, A Report from the 21st Century Commission on the Future of Community Colleges*, by American Association of Community Colleges, 2012, p. 8. Copyright 2012 by American Association of Community Colleges.

Similarly, almost 47% of community college students enrolled part time also were employed part time and just a slightly smaller percentage (40%) of students were employed full time (Table 2.33). Therefore, 87% of community college students enrolled as part time students also were employed while taking classes. Clearly many community college students are employed, which brings with it student engagement challenges.

Degrees and Certificates Awarded

Community colleges award associate's degrees and certificates. Nationally in 2008–2009, community colleges conferred over a million ($n = 1,055,000$) degrees and certificates

Table 2.34

Degrees and Certificates Awarded at Community Colleges Nationwide, 2008–2009

Type of award	%	<i>n</i>
Associate's degree	59.7	630,000
Certificate	40.2	425,000
Total	99.9	1,055,000

Note. Adapted from *Reclaiming the American Dream, Community Colleges and the Nation's Future, A Report from the 21st Century Commission on the Future of Community Colleges*, by American Association of Community Colleges, 2012, p. 8. Copyright 2012 by American Association of Community Colleges.

(AACC, n.d.; Table 2.34). About six in 10 (59.7%, $n = 630,000$) of those awards were associate's degrees, and 40.2% ($n = 425,000$) were certificates.

Financial Aid

One of the greatest barriers to a higher education is financial challenges. Many students at community colleges have significant financial need. Therefore, it is not surprising that, nationally, most community college students receive financial aid. More specifically, in 2007–2008 almost six in 10 (59%) students at community college received some sort of financial aid, and over four in 10 (42%) received federal financial aid (AACC, 2012). Nationally and locally, there is concern over growing student debt, currently the greatest form of debt in the United States.

Revenue Sources

The sources of revenues for community colleges have shifted. In general, through increased tuition and fees, students are paying larger portions of the total revenue at community colleges. Overall, trends reveal that various nonstudent sources of financial revenue are decreasing for community colleges (and also for 4-year colleges and universities). At many community colleges where federal, state, and local sources of funding

have decreased, students are being “asked” to make up financial shortfalls with increases in tuition and fees. Those increases are particularly difficult for low-income students.

Community colleges are increasingly becoming tuition driven.

In 2008–2009, as shown in Table 2.35, revenue sources for community colleges included about one third (34%) from state funds and one fifth (20%) from local funds (AACC, 2012). In addition, an equal percentage of revenue was received from student tuition and fees (16%) and federal funds (16%), and 13% was received from other sources (Table 2.35). Currently, the percentage of revenue at many Illinois community colleges from student tuition and fees is over 50%.

Table 2.35

Revenue Sources for Community Colleges Nationwide, 2008–2009

Revenue source	%
State	34
Local	20
Student tuition and fees	16
Federal	16
Other	13

Note. Adapted from *Reclaiming the American Dream, Community Colleges and the Nation’s Future, A Report from the 21st Century Commission on the Future of Community Colleges*, by American Association of Community Colleges, 2012, p. 8. Copyright 2012 by American Association of Community Colleges.

Cost of Higher Education

One of the seminal goals of community colleges is economic accessibility. There is no disagreement that community colleges are economically much more reasonable than are 4-year institutions. Community colleges continue to be a “good bang for the buck.” In 2011–2012, the national average annual tuition and fees for community colleges was \$2,963,

whereas the national average annual tuition and fees at 4-year public in-state institutions was \$8,244 (AACC, 2012). Based on that data, tuition and fees at community colleges was just over one third of that of 4-year institutions.

Student Characteristics

It has been documented that students at community colleges may face different challenges (e.g., part-time enrollment) than do students at 4-year colleges and universities. It also has been shown that many at-risk students are enrolled in community colleges. For example in 2007–2008, 42% of community college students were first-generation students, 13% were single parents, and another 12% had at least one identified disability (AACC, 2012, p. 8), all characteristics that could put a student at risk for not continuing their studies. There were twice as many non-U.S. citizens (6%) enrolled in community colleges as there were U.S. veterans (3%; AACC, 2012, p. 8). The number of non-U.S. citizens at Illinois community colleges may increase with the recent passage of the Achieving the Development, Relief, and Education for Alien Minors Act (DREAM) Act (Illinois passed the Achieving the DREAM Act legislation and there appears to be support for the Achieving the DREAM Act at the national level). All these factors present challenges for students enrolled in the nation's community colleges.

Profile of Postsecondary Education Nationally

Community colleges are an important component of higher education in the United States. The following national profile of postsecondary education provides important contextual national educational information for this study. Although Illinois community colleges are a part of Illinois higher education, they also are a part of postsecondary education in the United States.

The focus in this study was on student engagement. Student engagement can benefit students and institutions at all levels. Therefore, national postsecondary education information and data are provided for students at 2-year and 4-year institutions, public and private institutions, and not-for-profit and for-profit institutions.

To be effective, student engagement strategies should differ depending on the needs of students. The profile of students varies depending on type of postsecondary institution. Nationally, there are several major types of postsecondary institutions: 2-year and 4-year institutions, as well as public and private institutions. Private institutions are further subdivided into not-for-profit and for-profit institutions. As detailed below, the majority of students at 2-year public institutions (e.g., community colleges) are enrolled part time, whereas the majority of students at other institutions are enrolled full time. As a result, student engagement strategies may differ between 2-year and 4-year institutions. For student engagement to be most effective, it must be based on information about the characteristics of students at specific institutions of higher education. The national data presented below provide such information about students.

Unless noted otherwise, the information in this section was taken from the *Condition of Education, 2012* (Snyder & Dillow, 2012). This NCES annual report is mandated by the U.S. Congress. Because data in the report were gathered from different sources and because of rounding practices, there may be discrepancies in reported statistics.

Enrollment

Historical data (and future projections). Approximately 18.1 million ($n = 18,078,672$) undergraduate students were enrolled in degree-granting postsecondary students in the United States in fall 2010 (Snyder & Dillow, 2012). The projected enrollment for the

nation in 2021 is 20.6 million students. In addition to the overall growth in enrollment, diversity of students also is expected to continue to increase.

Enrollment at postsecondary educational institutions continues to grow in the United States. Between 2000 and 2010, student enrollment increased by 37%, from 13.2 million to 18.1 million students (see Table 2.36). Slightly larger student enrollments were experienced in the 1970s (42%), and slower student rates of enrollment growth were experienced in the 1980s (14%) and the 1990s (10%).

The vast majority of students at the nation's 2-year institutions, where this study on student engagement focused, are enrolled in 2-year public colleges (e.g., community colleges; see below). The national student enrollment at 2-year public institutions increased by about three and a half times from 1970 ($n = 2.2$ million) to 2010 ($n = 7.2$ million; see Table 2.36).

From 2000 to 2010, overall student enrollment increased from 5.9 million to 7.7 million at all 2-year institutions. During that time period, student enrollment increased by 26%, from 5.7 to 7.2 million students at 2-year public institutions; increased by a 124%, from 192,000 to 430,000 students, at 2-year private for-profit institutions; and decreased by 44%, from 59,000 to 33,000 students, at 2-year not-for-profit institutions (Table 2.36).

The projected student enrollment for 2021 is about 8.3 million students at 2-year public institutions and 8.8 million at all 2-year institutions. Student enrollment at 2-year public institutions has clearly increased and is projected to continue to increase.

In the decade from 2000 to 2010, overall student enrollment at 4-year institutions also increased, from 7.2 to 10.4 million students. During that time, student enrollment at 4-year public institutions increased by 34%, from 4.8 to 6.5 million students; enrollment at 4-year

Table 2.36

Nationwide Enrollment at Postsecondary Institutions, 1970–2010 (and Projected 2021)

Year	All postsecondary institutions (<i>n</i>)	2-year public institutions (<i>n</i>)
1970	7,369,000	2,195,000
1975	9,679,000	3,832,000
1980	10,475,000	4,328,000
1985	10,597,000	4,270,000
1990	11,959,000	4,996,000
1995	12,232,000	5,277,000
2000	13,155,000	5,697,000
2005	14,964,000	6,184,000
2010	18,079,000	7,218,000
2021 (projected)	20,597,000	8,291,000

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 34, 162, 164.

private not-for-profit institutions increased by 22%, from 2.2 million to 2.6 million students; and a very large enrollment increase of 513% was realized at 4-year private for-profit institutions, although with relatively low enrollment numbers (from 0.2 million to 1.3 million students).

2-year versus 4-year institutions and public versus private institutions. In 2010, as reported by Snyder and Dillow (2012) and shown in Table 2.37, more students were enrolled in 4-year institutions (57.5%, $n = 10.4$ million) than in 2-year institutions (42.4%, $n = 7.7$ million). In addition, many more students (75.8%, $n = 13.7$ million) were enrolled in public than in private institutions: 14.6% ($n = 2.7$ million) at private not-for-profit and 9.5% ($n = 1.7$ million) at private for-profit. In addition, 75.8% ($n = 13.7$ million) of all students were enrolled in public institutions whereas 24.1% (4.4 million) were enrolled in private not-for-profit and private for-profit institutions.

Table 2.37

Nationwide Higher Education Enrollment by Institution Type, 2010

Institution type	%	<i>n</i>
2-year versus 4-year institutions		
4-year institutions (public and private)	57.5	10,398,000
2-year institutions (public and private)	42.4	7,681,000
Total	99.9	18,079,000
Public versus private institutions		
Public		
2-year public		7,218,000
4-year public		6,486,000
Total public (2-year and 4-year)	75.8	13,704,000
Private not-for-profit		
2-year		33,000
4-year		2,621,000
Total private not-for-profit (2-year and 4-year)	14.6	2,654,000
Private for-profit		
2-year		430,000
4-year		1,291,000
Total private for-profit (2-year and 4-year)	9.5	1,721,000
Grand totals	99.9	18,079,000
Projected		
2012, national enrollment		20,597,000
2021, public institutions	75.9	15,632,000

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 34, 163.

National data reveal that more students enrolled in 2-year public institutions ($n = 7,218,000$) than in 4-year public institutions ($n = 6,486,000$) in 2010, a difference of 732,000 (Snyder & Dillow, 2012). However, more students were enrolled in 4-year private institutions (not-for-profit and for-profit) than in the nation's 2-year private institutions (Table 2.37). More specifically, about eight times as many students enrolled in 4-year private not-for-profit institutions ($n = 2,621,000$) than in 2-year not-for-profit institutions (33,000). Likewise, about three times as many students enrolled in 4-year for-profit institutions ($n = 1,291,000$) than in 2-year for-profit institutions ($n = 430,000$). At private institutions, clearly many more students were enrolled in 4-year institutions than in 2-year institutions.

At 2-year institutions in 2010, the vast majority of students (93.9%, $n = 7.2$ million) were enrolled in public institutions (e.g., community colleges; Snyder & Dillow, 2012). Of the remaining students, 5.5% ($n = 430,000$) were enrolled in 2-year private for-profit institutions, and only 0.42% ($n = 33,000$) were enrolled in 2-year private not-for-profit institutions. Of the students enrolled in the nation's 4-year institutions in 2010, 62.3% ($n = 6.4$ million) were enrolled in public institutions, 25.2% ($n = 2.6$ million) were enrolled in private not-for-profit institutions, 12.4% ($n = 1.2$ million) were enrolled in private for-profit institutions (Table 2.38).

Because three-quarters of the nation's students are enrolled in public institutions, when national postsecondary demographic information is presented, that information often reflects trends at public institutions (both 2-year and 4-year). Further, due to the overwhelming size of student enrollment at 2-year public institutions, any aggregate national

Table 2.38

Nationwide Enrollment by Institution Type, 2010

Institution type	4-year institutions		2-year institutions	
	%	<i>n</i>	%	<i>n</i>
Public	62.3	6,486,000	93.9	7,218,000
Private not-for-profit	25.2	2,621,000	0.42	33,000
Private for-profit	12.4	1,291,000	5.50	430,000
Total	99.9	10,398,000	99.82	7,681,000

Note. Adapted from *Note. Adapted from Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, p. 164.

data for 2-year institutions are heavily skewed toward 2-year public institutions (often community colleges).

Gender. There can be different student engagement challenges for female students than for male students. For example, although over the past few decades gender roles have changed, female students still may have significantly more dependent care and family responsibilities than male students do. For several years, more female students than male students enrolled nationally in postsecondary education. In fall of 2010, 56.6% (*n* = 10.2 million) of students were female and 43.3% (*n* = 7.8 million) of students were male (Snyder

Table 2.39

Nationwide Enrollment by Gender, Fall 2010 and Projected 2021

Gender	Fall 2010		Projected 2021	
	%	<i>n</i>	%	<i>n</i>
Female	56.7	10,243,509	58.4	12,033,000
Male	43.3	7,835,163	41.6	8,564,000
Total	100.0	18,078,672	100.0	20,597,000

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 34, 162, 164.

& Dillow, 2012; Table 2.39). Between 2000 and 2010, the enrollment of female students increased by 39% (7.4 to 10.2 million) and the enrollment of male students increased by 36% (5.8 to 7.8 million).

Age of student. Students in different age groups have different needs and, hence, also can have different student engagement needs. The data reported by Snyder and Dillow (2012) are based on the number of individuals, 3 to 34 years of age, who were enrolled in school (the term used by NCES) in October 2010. In general, the type of school was not identified, but one may assume that most students 18 years of age and older were enrolled in some type of postsecondary education.

Nationally in 2010, just over half of 18- to 21-year-olds (51.2%) and 20- to 21-year-olds (52.4%) were enrolled in school in 2010 (Table 2.40; Snyder & Dillow, 2012). For older students, 28.9% of 22- to 24-year-olds were enrolled in school, as were 14.6% of 25- to 29-year-olds and 8.3% of 30- to 34-year-olds.

Across all age groups, in the four decades between 1970 and 2010, there were significant increases in the percentage of students enrolled in college. During that time, the rate of school enrollment increased from 37% to 51% for students 18–19 years of age (69.2% of all 18- to 19-year-olds were in school: 51.2% were in college and 18.1% in high school), and the enrollment of students 20–21 years of age increased from 31.9% to 52.4%. Even greater enrollment growth was experienced by students who were between 22 and 34 years of age during that time: enrollment almost doubled, from 14.9% to 28.9%, for students 22–24 years of age, from 7.5% to 14.6% for those from 25–29 years of age, and from 4.2% to 8.3% for those from 30–34 years of age. Clearly a greater proportion of the population was in school in 2010 compared to 1970.

Table 2.40

Nationwide Percentage of Population Enrolled in Higher Education by Age, October 2010

Age (years)	%
18–19	51.2
20–21	52.4
20–24	38.6
22–24	28.9
25–29	14.6
30–34	8.3

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 16–17, 120.

During the most recent decade, from 2000 to 2010, enrollment also increased: from 32% to 39% for students 20–24 years of age, from 11% to 15% for those 25–29 years of age, and from 7% to 8% for those 30–34 years of age.

Race/ethnicity. Most of the nation’s students in higher education were White. However, student enrollment strategies should be tailored to and focused on specific student characteristics. For example, for students who may be classified as White, but do not have English as their first language, may face unique challenges.

Nationally in 2010, 60.2% students, nearly 11 million of over 18 million, enrolled in postsecondary education were White (Table 2.41; Snyder & Dillow, 2012). There were similar enrollment counts for Black students (14.8%, $n = 2.6$ million) and Hispanic students (14.0%, $n = 2.5$ million), and Asian students numbered slightly more than 1 million (5.6%). The enrollment numbers for the students in the remaining race/ethnicity categories were small, although nationally over 400,000 (2.2%, $n = 400,284$) nonresident aliens were enrolled in postsecondary education.

Table 2.41

Nationwide Postsecondary Enrollment by Race/Ethnicity, Fall 2010

Race/Ethnicity	%	<i>n</i>
White	60.2	10,897,654
Black	14.8	2,676,501
Hispanic	14.0	2,543,581
Asian	5.6	1,030,299
Native Hawaiian/Pacific Islander	0.31	57,574
American Indian/Alaskan Native	0.99	179,278
Two or more races	1.6	293,501
Nonresident Alien	2.2	400,284
Total	99.7	18,078,672

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 90, 250, 251.

4-year institutions. Based on the national statistics reported by Snyder and Dillow (2012), the majority of students enrolled in 4-year institutions in 2010 were classified as White (Table 2.42). More specifically, about two-thirds of student enrollment at 4-year public institutions (64.0%, *n* = 4.1 million) and 4-year private not-for-profit institutions (67.1%, *n* = 1.7 million) were White, whereas slightly over half (51.1%, *n* = 660,325) of students enrolled in 4-year private for-profit institutions were White.

Just as for postsecondary enrollment as a whole, there were similar enrollment statistics for Black students (12.0%, *n* = 779,602) and Hispanic students (11.8%, *n* = 771,537). Only 6.4% (*n* = 418,778) of enrollees were Asian, and small numbers of students from other racial/ethnic classifications also were enrolled.

Table 2.42

Nationwide Enrollment at 4-Year Institutions by Race/Ethnicity and Institution Type, Fall 2010

Race/ethnicity	Public		Private not-for-profit		Private for-profit	
	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>
White	64.0	4,152,584	67.1	1,760,349	51.1	660,325
Black	12.0	779,602	12.9	338,537	27.9	360,616
Hispanic	11.8	771,537	8.0	211,277	13.5	174,386
Asian	0.4	418,778	5.3	140,818	2.7	34,997
Native Hawaiian/ Pacific Islander	0.2	15,899	0.2	6,410	0.6	7,168
American Indian/ Alaskan Native	0.9	60,118	0.3	7,880	1.0	13,875
Two or more races	1.6	107,446	1.6	43,050	1.7	22,486
Nonresident Alien	2.7	180,288	3.9	102,423	1.3	16,948
Total	93.6	6,486,252	99.3	2,620,744	99.8	1,290,801

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 90, 250.

The enrollment patterns of students by race/ethnicity for 4-year private not-for-profit institutions in 2010 were similar to those of 4-year public institutions (although 4-year private not-for-profit institutions had lower enrollment of Hispanic students but higher enrollment of nonresident alien students). Two-thirds (67.1%, $n = 1.7$ million) of students enrolled in private not-for-profit institutions were White, along with 12.9% ($n = 338,537$) who were Black, 8.0% ($n = 211,277$) who were Hispanic, 5.3% ($n = 140,818$) who were Asian students, 3.9% ($n = 102,423$) who were nonresident aliens, and small numbers of students from other races/ethnicity (Table 2.42; Snyder & Dillow, 2012).

Enrollment patterns by race/ethnicity at 4-year private for-profit institutions in 2010 differed from 4-year public and private not-for-profit institutions. Compared to 4-year public and not-for-profit institutions, the enrollment of White students at 4-year private for-profit

institution was lower, just over half (51.1%, $n = 660,325$), the enrollment of Black students was a much higher percentage (27.9%, $n = 360,616$), the enrollment of Hispanic students was a slightly higher percentage (13.5%, $n = 174,386$), the enrollment of Asian students was a slightly lower percentage (2.7%, $n = 34,977$), and the percentages of students from other races/ethnicity remained low (Table 2.42; Snyder & Dillow, 2012).

2-year institutions. Compared to enrollment at 4-year postsecondary institutions, the enrollment at 2-year institutions in 2010 reflected fewer White students and more minority students. In addition, 2-year public institutions were the only postsecondary education institutions where the enrollment of Hispanic students was higher than the enrollment for Black students. Also, 2-year private for-profit institutions were the only institutions where less than half (44.1%) of their students were White students (Table 2.43; Snyder & Dillow, 2012).

Nationally, of the students enrolled in 2-year public institutions in 2010, 57.0% ($n = 4.1$ million) were White, 17.8% ($n = 1.3$ million) were Hispanic, 14.9% ($n = 1$ million) were Black, 5.8% ($n = 0.4$ million) were Asian, and additional small number of students were from other races/ethnicities. Only 32,660 students nationally were enrolled in all 2-year private not-for-profit institutions in 2010. Of note, the enrollment of Black students (22.8%, $n = 7,465$) at 2-year private not-for-profit institutions was much higher than the enrollment rate of Hispanic students (9.0%, $n = 2,943$), and there also was a large enrollment of American Indian/ Alaskan Native students (5.7%, $n = 1,884$). Over half (54.0%, $n = 17,644$) of students enrolled in 2-year private not-for-profit institutions were White students, 4.2% ($n = 1,377$) were Asian students, and there were small numbers of students from other races/ethnicity (Table 2.43; Snyder & Dillow, 2012). At 2-year for-profit institutions in 2010,

Table 2.43

Nationwide Enrollment at 2-year Institution by Race/Ethnicity and Institution Type, Fall 2010

Race/ethnicity	Public		Private not-for-profit		Private for-profit	
	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>
White	57.0	4,116,728	54.0	17,664	44.1	190,004
Black	14.9	1,075,976	22.8	7,465	26.5	114,305
Hispanic	17.8	1,288,164	9.0	2,943	22.1	95,274
Asian	5.8	20,794	4.2	1,377	3.1	13,535
Native Hawaiian/ Pacific Islander	0.4	25,884	0.8	154	0.8	2,059
American Indian/ Alaskan Native	1.1	81,504	5.7	1,884	0.9	4,017
Two or more races	1.5	112,484	0.6	208	1.8	7,827
Nonresident Alien	1.3	96,504	2.9	965	0.7	3,156
Total	99.8	6,818,038	100.0	32,660	100.0	430,177

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 90, 250.

44.1% ($n = 190,004$) of student enrollment were White students, 26.5% ($n = 114,305$) were Black, 22.1% ($n = 95,274$) were Hispanic, 3.1% ($n = 13,535$) were Asian, and there were small numbers of students from other races/ethnicities.

Race/ethnicity enrollment by institution type. Nationally, most students in all racial/ethnicity categories were enrolled in public institutions (2-year and 4-year) and 4-year not-for-profit institutions. In general, national trends seem to reflect an overall pattern of about 70–80% of all students from all racial/ethnic groups enrolled in public institutions (2-year and 4-year) and about 10–15% of students from all racial/ethnic groups enrolled in 4-year not-for-profit institutions.

The data reported by Snyder and Dillow (2012) clearly showed that many minority students were enrolled in the nation's 2-year public institutions (e.g., community colleges).

Although nationally the majority of minority students (except nonresident aliens) in 2010 were enrolled in 2-year public institutions (e.g., community colleges), the enrollment numbers at 2-year public institutions were especially robust for Hispanic students and Native Hawaiian/Pacific Islander students (Table 2.44).

Nationally, the enrollment for White students in 2010 was about evenly divided between 2-year public institutions (37.8%) and 4-year public institutions (38.1%; Table 2.44). Hence, three-quarters (75.9%) of White students nationally were enrolled in public institutions (2-year and 4-year). An additional 16.2% of White students were enrolled in 4-year private not-for-profit institutions (Snyder & Dillow, 2012).

In 2010, 40.2% of Black students were enrolled in 2-year public institutions, 29.1% were enrolled in 4-year public institutions, another 12.6% were enrolled in 4-year not-for-profit institutions, and a disproportionately large 13.5% were enrolled in 4-year private for-profit institutions (Table 2.44; Snyder & Dillow, 2012). Over half (50.6%) of the nation's Hispanic students in 2010 were enrolled in 2-year public institutions, 30.3% were enrolled in 4-year public institutions, and about equal percentages of Hispanic students were enrolled in 4-year private not-for-profit institutions (8.3%) and in 4-year private for-profit institutions (6.9%).

The rates of enrollment for Asian students in 2010 were almost the same at 2-year public institutions (40.8%) as at 4-year public institutions (40.6%), meaning more than eight in ten of the nation's Asian students were enrolled in public institutions (2-year and 4-year). An additional 13.7% of Asian students enrolled in 4-year private not-for-profit institutions (Table 2.44; Snyder & Dillow, 2012).

In 2010, 45.0% of Native Hawaiian/Pacific Islander students were enrolled in 2-year public institutions (e.g., community colleges). An additional 27.6% of Native Hawaiian/Pacific Islander students enrolled in 4-year public institutions, 11.1% enrolled in 4-year not-for-profit institutions, and 12.5% enrolled in 4-year for-profit institutions (Table 2.44; Snyder & Dillow, 2012). As with Native Hawaiian/Pacific Islander students, 45.5% of American Indian/Alaskan Native students were enrolled in 2-year public institutions (e.g., community colleges), and another 33.5% of students enrolled in 4-year public institutions in 2010. One in 10 American Indian/Alaska Native students were enrolled in 4-year not-for-profit institutions, and 7.7% were enrolled in 4-year for-profit institutions (Table 2.44; Snyder & Dillow, 2012).

Table 2.44

Nationwide Postsecondary Percentage Enrollment of Racial/Ethnic Groups by Institution Type, Fall 2010

Race/ethnicity	Public		Private not-for-profit		Private for-profit	
	2-year	4-year	2-year	4-year	2-year	4-year
White	37.8	38.1	0.2	16.2	1.7	6.1
Black	40.2	29.1	0.3	12.6	4.3	13.5
Hispanic	50.6	30.3	0.1	8.3	3.7	6.9
Asian	40.8	40.6	0.1	13.7	1.3	3.4
Native Hawaiian/ Pacific Islander	45.0	27.6	0.3	11.1	3.6	12.5
American Indian/ Alaskan Native	45.5	33.5	1.1	10.0	2.2	7.7
Two or more races	38.3	36.6	0.1	14.7	2.7	7.7
Nonresident alien	24.1	45.0	0.2	25.6	0.8	4.2

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 90, 250.

Nationally about equal percentages of students identified as two or more races were enrolled in 2-year public institutions (38.3%) and 4-year public institutions (36.3%) in 2010. Of the students in the two or more races group, 14.7% were enrolled in 4-year not-for-profit institutions and about half that percentage (7.7%) were enrolled in 4-year for-profit institutions (Table 2.44; Snyder & Dillow, 2012).

The national enrollment pattern for nonresident alien students differed from that of other student racial/ethnic groups. In 2010, 45.0% of nonresident aliens were enrolled in 4-year public institutions, 24.1% were enrolled in 2-year public institutions, and 25.6% (a very large percentage compared to other racial/ethnic groups) were enrolled in 4-year private not-for-profit institutions (Table 2.44; Snyder & Dillow, 2012).

Full-time versus part-time enrollment. Strategies for student engagement differ for students enrolled full time and those enrolled part time. In general, it is more challenging to engage students enrolled part time (e.g., due to outside commitments) than it is for students enrolled full time.

Nationally, there were clearly differences in full-time and part-time enrollment patterns depending on the type of institution. In 2010, 56.1% of students at 2-year public institutions were enrolled part time. In contrast, 70.7% of students at 2-year not-for-profit institutions, 90.5% of students at 2-year for-profit institutions, and 77.7% of students at 4-year institutions were enrolled full time. The large percentage of students enrolled part time at 2-year public institutions clearly differ from that at all other postsecondary institutions (Table 2.45; Snyder & Dillow, 2012).

Table 2.45

Nationwide Enrollment (Full-Time Versus Part-Time) at 2-Year and 4-Year Institutions, 2010 and 2021 (Projected)

Enrollment status	4-year institutions		2-year institutions	
	%	<i>n</i>	%	<i>n</i>
2010				
Full time	77.7	8,086,000	43.8	3,365,000
Part time	22.2	2,311,000	56.1	4,316,000
Total	99.9	10,397,000	99.9	7,681,000
Projected 2021				
Full time	76.7	9,039,000	42.8	3,780,000
Part time	23.2	2,741,000	57.1	5,037,000
Total	99.9	11,780,000	99.9	8,817,000

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 90, 250.

As reported above, in 2010 the majority of students enrollment at the nation's 4-year institutions was enrolled full time. In 2010, the rates of full-time enrollment (77.7%) and part-time enrollment (22.2%) at 4-year public institutions nationally reflected the rates of full-time versus part-time enrollment at all 4-year institutions nationally (Table 2.45; Snyder & Dillow, 2012). At 4-year private not-for-profit institutions, 82.9% ($n = 2.1$ million) of students were enrolled full time, meaning almost five times as many students were enrolled full time than were enrolled part time ($n = 446,460$). At 4-year for-profit institutions, 67.3% ($n = 869,042$) of students were enrolled full time, leaving 32.6% ($n = 421,759$) who were enrolled part time and meaning over twice as many students were enrolled full-as part time.

Two-year public institutions (e.g., community colleges) were the only postsecondary institutions in 2010 where the majority of students were enrolled part time (Table 2.46; Snyder & Dillow, 2012). Nationally in 2010, 56.2% ($n = 4.3$ million) of students at 2-year public institutions were enrolled part time and 43.8% ($n = 3.3$ million) of students were

Table 2.46

Nationwide Enrollment (Full-Time Versus Part-Time) by Institution Type, Fall 2010

Enrollment status	Public		Private not-for-profit		Private for-profit		Total	
	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>
4-year institutions								
Full time	77.7	5,043,049	82.9	2,174,284	67.3	869,042	77.7	8,086,000
Part time	22.2	1,443,203	17.0	446,460	32.6	421,759	22.2	2,311,000
Total	99.9	6,486,252	99.9	2,620,744	99.9	1,290,801	99.9	10,397,000
2-year institutions								
Full time	40.9	2,952,480	70.7	23,101	90.5	389,612	43.8	3,365,193
Part time	59.0	4,265,558	29.2	9,559	09.4	40,565	56.2	4,315,682
Total	99.9	7,218,038	99.9	32,660	99.9	430,177	100.0	7,680,875

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 90, 250.

enrolled full time. The part-time and full-time enrollment pattern at public 2-year institutions was markedly different from the enrollment patterns at 2-year private institutions (both not-for-profit and for-profit). At 2-year private not-for-profit institutions, 70.7% ($n = 23,101$) of students were enrolled full time and 29.2% ($n = 9,559$) students were enrolled part time. Likewise, at 2-year private for-profit institutions, 90.5% ($n = 389,612$) of students were enrolled full time and only 9.4% ($n = 40,565$) were enrolled as part-time students. The data for all 2-year institutions are skewed by the large number of students who were enrolled in 2-year public institutions (e.g., community colleges).

Postsecondary Degrees Awarded

Student graduation is one of the most common measures of student success and student academic achievement. Nationally for 2009–2010, of the 18.1 million students enrolled in postsecondary education, there were over 3.3 million postsecondary degrees conferred (Table 2.47; Snyder & Dillow, 2012). About half of all degrees ($n = 1.6$ million),

at all levels, granted in 2009–2010 were bachelor’s degrees. More specifically in that period, there were about twice as many bachelor’s degrees ($n = 1,650,014$) awarded than associate’s degrees ($n = 849,452$). In addition, 693,025 master’s degrees and 158,558 doctorate degrees were awarded.

Table 2.47

Postsecondary Degrees Awarded Nationwide by Degree Type, 1999–2000 and 2009–2010

Degree	Degrees awarded (n)		% increase from 2009–2010
	1999–2000	2009–2010	
Associate’s	564,933	849,452	50.4
Bachelor’s	1,237,875	1,650,014	33.4
Master’s	463,185	693,025	49.6
Doctorate	118,736	158,558	33.5
Total	2,384,729	3,351,049	40.5

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 110–111.

Nationally, the number of postsecondary degrees awarded has increased. The number awarded increased substantially during the first decade of the 21st century. From 1999–2000 to 2009–2010, the number of postsecondary degrees conferred increased for all public and private institutions at every level: a 50.4% increase in the number of associate’s degrees and a similar increase of 49.6% in the number of master’s degrees awarded, and a 33.3% increase in the number of bachelor’s degrees and a similar increase of 33.5% in the number of doctorate degrees awarded.

At 4-year institutions, the number of degrees granted in 2009–2010 nationally increased. In the decade from 1999–2000 to 2009–2010, the percentage of degrees conferred at 4-year public institutions nationally increased by 33.3% (Table 2.48; Snyder & Dillow,

2012). Broken down by institution type, 4-year public institutions during that decade saw 29.4% increase, private not-for-profit institutions saw a 23.6% increase, and private for-profit institutions saw a very large increase of 387.5% (Snyder & Dillow, 2012, p. 111). At all 4-year institutions 63.6% of all degrees conferred were awarded by public institutions (to 1 million students), 30.5% ($n = 503,164$) of the degrees awarded were from 4-year private not-for-profit institutions, and only 5.9% of the degrees were from 4-year private for-profit institutions.

At the nation's 2-year institutions in 2010, as shown in Table 2.48, 75.4% ($n = 640,113$) of degrees were awarded by public institutions, 19.1% ($n = 142,666$) were awarded by private for-profit institutions, and only 5.5% ($n = 46,673$) were conferred by private not-

Table 2.48

Postsecondary Degrees Awarded Nationwide by Institution Type, 1999–2000 and 2009–2010

Institution type	Degrees awarded				% increase between 1999–2000 and 2009–2010
	1999–2000		2009–2010		
	%	<i>n</i>	%	<i>n</i>	
4-year institutions					
Public	65.5	810,855	63.6	1,049,057	29.4
Private not-for-profit	32.9	406,958	30.5	503,164	23.6
Private for-profit	1.6	20,062	5.9	97,793	387.5
Total	100.0	1,237,875	100.0	1,650,014	33.3
2-year institutions					
Public	79.4	448,446	75.4	640,113	42.7
Private not-for-profit	8.2	46,337	5.5	46,673	0.72
Private for-profit	12.4	70,150	19.1	162,666	131.9
Total	100.0	564,933	100.0	849,452	50.4

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 110–111.

for-profit institutions (Snyder & Dillow, 2012). At 2-year institutions, clearly most degrees were awarded by public institutions and very few degrees were awarded at private not-for-profit institutions. From 1999–2000 to 2009–2010 the number of degrees awarded at 2-year public institutions increased by 42.7% (from 448,446 to 640,113), and there was a large increase (131.9%) in the number of degrees awarded at 2-year private for-profit institutions (70,150 to 162,666). There was virtually no change in the number of degrees awarded during that time at 2-year not-for-profit institutions (Table 2.48; Snyder & Dillow, 2012).

Graduation Rates

A graduation rate is defined as full-time, first-time students who graduate within 150% of normal completion (catalog) time (see Snyder & Dillow, 2012, p. 252). Nationally, graduation rates in postsecondary education in 2010 varied markedly by type of institution. It is significant that the overall graduation rates at 4-year public institutions were much higher (56.0%) than at 2-year institutions (20.4%; Table 2.49). The fact that only about one in five students graduate from 2-year public institutions reveals the need for student engagement. Almost two-thirds (65.4%) of students enrolled in 4-year private not-for-profit institutions graduated, as did just over half (51.0%) of students enrolled in 2-year private not-for-profit institutions. At that same time, more than twice the number of students at 2-year for-profit institutions graduated (60.3%) than did students at 4-year private for-profit institutions (28.4%).

There were significant differences in graduation rates by type of institution. Based on comparisons between the 2007 starting cohort for 2-year institutions and the 2004 starting cohort for 4-year institutions, overall the graduation rates at 4-year public and private not-for-profit were much higher than at 2-year public and private not-for-profit institutions (Table

2.49; Snyder & Dillow, 2012). In contrast, the graduation rate at 2-year private for-profit institutions was more than twice as high as at 4-year private for-profit institutions. More specifically, the graduation rate at 4-year public institutions (56.0%) was about twice that of 2-year public institutions (29.9%). Similarly the graduation rate at 4-year private not-for-profit institutions (65.4%) was higher compared to 2-year private not-for-profit institutions (51.0%). In contrast, there was a much higher graduation at 2-year private for-profit institutions than at 4-year private for-profit institutions. The data revealed that graduation rates clearly varied according to the type of institution.

At 4-year institutions, graduation rates are defined as students who graduated at 150% of completion (catalog) time (i.e., six years). As reported above, graduation rates varied by type of 4-year institution. Based on the 2004 starting cohort, the overall graduation rate at 4-year institutions in 2010 was 58.3% (Table 2.49; Snyder & Dillow, 2012). More specifically, 65.4% of students at private not-for-profit institutions graduated, and 56.0% of students at

Table 2.49

National Graduation Rates^a (%) by Institution Type

Institute type	4-year institutions	2-year institutions
Public	56.0	20.4
Private not-for-profit	65.4	51.0
Private for-profit	28.4	60.3
All	58.3	29.9

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 108–109, 279–280.

^aAfter 150% catalog completion time (6 years at 4-year institutions; 3 years at 2-year institutions). 2004 starting cohort at 4-year institutions; 2007 starting cohort at 2-year institutions.

public institutions graduated, whereas only 28.4% students at private for-profit institutes graduated, a rate much lower than at other 4-year institutions.

At 2-year institutions, as with 4-year institutions, graduation rates are based on 150% of completion (catalog) time (i.e., 3 years). Based on the 2007 starting cohort, the graduation rate at the nation's 2-year public institutions is low. Only 20.4% of students at 2-year public institution graduated, 51.0% of students at 2-year private not-for-profit institutions graduated, as did 60.3% of students at 2-year private for-profit institutions (Table 2.49; Snyder & Dillow, 2012). It could be argued that open enrollment admission policies, large numbers of students enrolled part time, and many students in need of developmental education courses affect the graduation rate at 2-year public institutions.

Gender. At all levels of postsecondary education nationally, female students have higher graduation rates than do male students (Table 2.50; Snyder & Dillow, 2012). In 2010, female students had a graduation rate of 62.0% for associate's degrees, 57.2% for bachelor's degrees, 60.3% for master's degrees, and 51.7% for doctorate degrees. From 2000–2010, graduation rates for female students increased from a third to a half: a 50.4% increase for associate's degrees, a 33.3% increase for bachelor's degrees, a 49.6% increase for master's degrees, and a 33.5% increase for doctoral degrees (Snyder & Dillow, 2012, p. 108–109, 284).

At 4-year institutions in 2010, the overall graduation rate was 54.7% for female students and 48.1% for male students (Table 2.50; Snyder & Dillow, 2012). Based on graduating at 150% of completion (catalog) time (i.e., 6 years) and the 1996 starting cohort, there were disparate overall graduation rates at different types of 4-year institutions (63.1% at private not-for-profit, 51.7% at public, and only 28.0% at private for-profit institutions), but

the graduation rates of female and male students were similar. For the cohort described above, more female students than male students graduated from 4-year public (female, 54.7%; male, 48.1%) and private not-for-profit institutions (female, 65.4%; male, 60.4%). However, the graduation rates were virtually the same for female students (27.9%) and male students (28.0%) at 4-year private for-profit institutions.

Table 2.50

National Graduation Rates^a (%) by Institution Type and Gender, 2010

Institution type	4-year institutions			2-year institutions		
	Female	Male	Overall	Female	Male	Overall
Public	54.7	48.1	51.7	20.8	19.9	20.4
Private not-for-profit	65.4	60.4	63.1	51.8	50.0	51.0
Private for-profit	27.9	28.0	28.0	61.3	58.3	60.3

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 108–109.

^aAfter 150% catalog completion time (6 years at 4-year institutions; 3 years at 2-year institutions). 1996 starting cohort at 4-year institutions; 2007 starting cohort at 2-year institutions.

At 2-year institutions in 2010, national female and male students the graduation rates were more similar than at 4-year institutions. The overall graduation rates varied markedly by type of 2-year institution: 20.4% at public institutions, 51.0% at private not-for-profit institutions, and 60.3% at private for-profit institutions (Table 2.50; Snyder & Dillow, 2012). The graduation rates for female and male students were similar at 2-year public (female, 20.8%; male, 19.9%), private not-for-profit institutions (female, 51.8%; male, 50.0%) and private for-profit institutions (female, 61.3%; male, 58.3%). However, as reported above, there were significant differences in overall graduation rates among types of 2-year institutions. Similar to graduation rates at 4-year institutions, graduation rates for the data at

2-year institutions were based on 150% of completion (catalog) time (i.e., three years) and the 2007 starting cohort.

Gender and race/ethnicity. Nationally graduation rates varied significantly by type of institution, gender, and race/ethnicity. As reported above, overall graduation rates were significantly higher at 4-year institutions than at 2-year institutions and were higher for female students than for male students. Graduation rates also varied based on race/ethnicity.

Historically, from 2000 to 2010, the number of postsecondary degrees increased for all racial/ethnic groups at all educational levels. During that period, Hispanic students at all educational levels realized the greatest gains in graduation rates. Of the 50.2% increase in all associate's degrees conferred in that period ($n = 833,337$ in 2010), the two racial/ethnic groups that showed the largest increases were Hispanic students (117.6% increase, $n = 112,211$ in 2010) and Black students (89.1% increase, $n = 113,905$ in 2010). The number of associate's degrees awarded to both American Indian/Alaskan Native students (59.1%, $n = 10,337$ in 2010) and Asian/Pacific Islander students (58.5%, $n = 44,021$ in 2010) increased by half. Finally, the number of associate's degrees awarded to White students increased by over a third (35.2%, $n = 552,863$ in 2010).

Similarly in 2000–2010, of the 33.7% increase in bachelor's degrees ($n = 1,602,480$ students in 2010), Hispanic students showed the greatest increase, 86.9% ($n = 140,316$ in 2010), followed by large increases for Black students (52.6%, $n = 164,844$ in 2010), Asian/Pacific Islander students (50.7%, $n = 117,422$ in 2010), American Indian/Alaskan Native students (42.2%, $n = 12,399$ in 2010), and a 25.7% increase for White students ($n = 1,672,499$ in 2010). Likewise during that time, the number of master's degrees increased by 50.4% ($n = 611,693$ in 2010); again Hispanic students showed the greatest gains (124.6%, n

= 43,535 students in 2010), followed by large increases for Black students (108.9%, $n = 76,458$ in 2010), Asian/Pacific Islander students (81.4%, $n = 42,702$), American Indians/Alaskan Native students (75.0%, $n = 3,960$ in 2010), and White students (36.9%, $n = 445,038$ in 2010). Finally during that same period of time, of the 31.9% increase of doctoral degrees ($n = 140,505$), the largest increases were again among Hispanic students (60.4%, $n = 8,085$ in 2010), Asian/Pacific Islander students (55.6%, $n = 16,625$ in 2010), and Black students (47.1%, $n = 10,417$ in 2010). The number of doctoral degrees awarded also increased for American Indian/Alaskan Native students (34.7%, $n = 952$ in 2010) and White students (25.8%, $n = 140,426$ in 2010).

Graduation rates by institution type, by gender, and by race/ethnicity at 4-year institutions. Nationally at 4-year institutions, graduation rates varied greatly by race/ethnicity, gender, and type of institution. As reported above, at 4-year institutions overall graduation rates were highest at private not-for-profit institutions (65.4%), followed by a graduation rate of 56.0% at public institutions and a low graduation rate of 28.4% at private not-for-profit institutions. For the data below, the graduation rate for the data at 4-year institutions was defined as students who graduated at 150% of completion (catalog) time (i.e., six years) and the data were based on the 1996 starting cohort (Snyder & Dillow, 2012).

At virtually all postsecondary institutions (except 4-year private for-profit institutions), graduation rates (and enrollment rates) were higher for female students than for male students. However, the data revealed the opposite pattern at 4-year private for-profit institutions: the overall graduation rate was higher for male students than for female students. In addition, for students in all racial/ethnicity groups (except White students)—that is, Black, Hispanic, Asian/Pacific Islander, American Indian/Alaskan Native—there were many more

male minority students (30.8%) than female students (17.3%) who graduated from 4-year private for-profit institutions (Table 2.51; Snyder & Dillow, 2012).

Nationally in 2010, graduation rates by race/ethnicity at 4-year institutions ranged from a high of 59.5% for Asian student to lows of 35.3% for American Indian/Alaskan Native students and 36.8% for Black students at public institutions (Table 2.51; Snyder & Dillow, 2012). Likewise, graduation rates by race/ethnicity ranged from 73.5% for Asian students to 44.6% for Black students at private not-for-profit institutions and from 33.2% for White students to 19.2% for Black students at private for-profit institutions. Graduation rates clearly were lower at 4-year private for-profit institutions than at 4-year public and not-for-profit institutions.

Asian students had the highest overall graduation rate: 63.4% at all types of 4-year institutions (Table 2.51; Snyder & Dillow, 2012)). Asian female students at 4-year public and private not-for-profit institutions had higher graduation rates than did Asian male students; 75.0% of Asian female students graduated from 4-year private not-for-profit institutions compared with 71.5% Asian males. Yet, the data are quite different for Asian students at 4-year private for-profit institutions where more Asian males (31.7%) graduated than did Asian females (24.9%).

The second highest graduation rate at 4-year institutions was for White students with an overall graduation rate of 58.1% (Table 2.51; Snyder & Dillow, 2012). Again, White female students had higher graduation rates than did male students at all three types of 4-year institutions: public, private not-for-profit, and private for-profit.

Hispanic students had the third highest overall graduation rate (45.7%) at 4-year institutions (Table 2.51; Snyder & Dillow, 2012). The overall graduation rate for Hispanic

Table 2.51

National Graduation Rates (%) by 4-Year Institution Type, Race/Ethnicity, and Gender

Race/ethnicity	Public	Private not-for-profit	Private for-profit
White (All = 58.1%)	54.3	65.7	33.2
Female	57.4	67.9	34.5
Male	50.8	63.0	32.3
Black (All = 38.9%)	36.8	44.6	19.2
Female	41.0	48.4	19.0
Male	30.3	38.9	19.4
Hispanic (All = 45.7%)	42.1	55.7	24.6
Female	58.3	21.9	
Male	52.1	26.7	
Asian/Pacific Islander (All = 63.4%)	59.5	73.5	28.9
Female	63.5	75.0	24.9
Male	55.2	71.5	31.7
American Indian/Alaska Native (All = 38.0%)	35.3	48.1	23.1
Female	37.0	49.2	17.3
Male	33.1	46.7	30.8

Note. The graduation rates for the data were defined as students who graduated at 150% of completion (catalog) time (i.e., six years) and were based on the 1996 starting cohort. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 108–109.

students at 4-year public institutions was 42.1%, and there were fewer graduates from private for-profit institutions (24.6%). However, overall graduation rate for Hispanic students at 4-year private not-for-profit institutions was 55.7%. Female Hispanic students graduated at a higher rate from 4-year public institutions (45.7%) and private for-profit institutions (58.3%) than did male Hispanic students (37.5% and 52.1%, respectively). However, male Hispanic students graduated from 4-year private for-profit institutions at a higher rate (26.7%) than did females (21.9%).

At 4-year institutions nationally, the overall graduation rate for Black students was 38.9% (Table 2.51; Snyder & Dillow, 2012). There were more Black female students than

male students who graduated from public institutions (female, 41.0%; male, 30.3%) and at private not-for-profit institutions (female, 48.4%; male, 38.9%). The overall graduation rate for Black students at 4-year private for-profit institutions was low, less than one in five (19.0%; Table 2.51).

The lowest overall graduation rates nationally at 4-year institutions were for American Indian/Alaska Native students (38.0%; Table 2.51; Snyder & Dillow, 2012). The graduation rates for that group varied greatly by type of institution. The overall graduation rate for this group of students was higher at 4-year private not-for-profit institutions (48.1%), than at public institutions (35.3%) and at private for-profit institutions (23.1%). An anomalous finding was that, at 4-year private for-profit institutions, the number of American Indian/Alaska Native male students graduation (30.8%) was almost twice that for American Indian/Alaska Native female students (17.3%).

The national data showed that overall graduation rates varied significantly by race/ethnicity (i.e., from 63.4% for Asian students to 38.0% for American Indian/Alaska Native students; Table 2.51). In addition, for students in virtually all classifications of race/ethnicity, female students had a higher graduation rate than did male students. Furthermore, 4-year private not-for-profit institutions had the overall highest graduation rates, followed by 4-year public institutions, and 4-year private for-profit had the lowest graduation rates (although often more male than female students graduated).

Graduation rates by institution type, by gender, and by race/ethnicity at 2-year institutions. As with 4-year institutions, in 2010 there were significant variations in graduation rates at 2-year colleges by institution type, race/ethnicity, and gender. For example, the overall graduation rate at 2-year private for-profit institutions (60.3%) was

approximately three times higher than the rate at 2-year public institutions (20.4%), whereas the overall graduation rate at 2-year private for-profit institutions was 51.0%. For the data from 2-year institutions, graduation rates were defined overall as completing a degree or certificate within 150% of the normal (catalog) time and were based on the 2007 starting cohort (Snyder & Dillow, 2012, p. 280). However, with the overwhelming large number of students enrolled in 2-year public institutions, and with the low graduation rates at those institutions, some data may be skewed toward 2-year public institutions and hence that statistic may not be representative of all 2-year private institutions.

Overall graduation rates at all 2-year institutions by racial/ethnic category ranged from about one quarter to one third: 33.6% for Asian/Pacific Islander students, 33.4% for Hispanic students, 29.5% for White students, 26.6% for American Indian students, and 25.3% for Black students, although those rates varied significantly by type of 2-year institution (Table 2.52; Snyder & Dillow, 2012).

By race/ethnicity and type of institution, the 2010 graduation rates ranged from 25.6% for Asian students to 11.9% for Black students at 2-year institutions, from 56.1% for White students to a low of 15.3% for American Indian/Alaskan Native students at private not-for-profit institutions, and from 68.5% for Asian students to 49.2% for Black students at private for-profit institutions (there was also a high graduation rate of 64.5% for Hispanic students at 4-year private for-profit institutions (Table 2.52; Snyder & Dillow, 2012). Graduation rates clearly were much lower at 2-year public institutions than at 2-year private not-for-profit and for-profit institutions.

Table 2.52

National Graduation Rates (%) by 2-Year Institution Type, Race/Ethnicity, and Gender

Race/ethnicity	Public	Private not-for-profit	Private for-profit
White (All = 29.5%)	23.0	56.1	65.0
Female	23.7	55.8	64.8
Male	22.3	56.4	65.3
Black (All = 25.3%)	11.9	43.6	49.2
Female	11.8	41.6	50.8
Male	12.0	45.5	44.6
Hispanic (All = 33.4%)	16.0	46.1	64.9
Female	16.8	49.5	67.3
Male	15.2	41.1	59.3
Asian/Pacific Islander (All = 33.6%)	25.6	51.0	68.5
Female	27.5	52.2	69.8
Male	24.0	49.3	66.3
American Indian/Alaska Native (All = 25.6%)	17.4	15.3	59.2
Female	16.5	18.9	60.2
Male	18.6	10.3	56.9

Note. The graduation rates for the data were defined as students who graduated at 150% of completion (catalog) time (i.e., 3 years) and were based on the 2007 starting cohort. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 108, 280.

At 2-year institutions, as at 4-year institutions, Asian students had the highest overall graduation rate (Table 2.52; Snyder & Dillow, 2012). However, the overall graduation rate for Asian students was about half at 2-year institutions (33.6%) than it was at 4-year institutions (63.4%). As reported, there were significant differences in the overall graduation rate by type of 2-year institution. At 2-year institutions, 25.6% of Asian students graduated from public institutions, 51.0% from private not-for-profit institutions, and 68.5% at private for-profit institutions.

Different from the findings at 4-year institutions, Hispanic students had the second highest overall graduation rate at 2-year institution (33.4%). The graduation rates for

Hispanic students at 2-year public institutions were low (16.0%), whereas 46.1% of Hispanic students graduated from 2-year private not-for-profit institutions and 64.9% of Hispanic students graduated from 2-year private for-profit institutions. At all 2-year institutions, Hispanic female students had higher graduation rates than did Hispanic male students (Table 2.52; Snyder & Dillow, 2012).

The overall graduation rate of White students at all public 2-year institutions was 29.5% (Table 2.52; Snyder & Dillow, 2012). At 2-year institutions the graduation rate for White students at public institutions was 23.0%, whereas 65.1% of White students graduated from private not-for-profit institutions and a similar percentage (65.0%) graduated from 2-year for-profit institutions. The graduation rate for White male students was higher than was the graduation rate for White female students at 2-year private not-for-profit and for-profit institutions (although the rates were similar).

At 2-year institutions, Native American/Alaskan Native students had the second lowest overall graduation rate at 25.6% (Table 2.52; Snyder & Dillow, 2012). At 2-year public institutions, the graduation rate for Native American/Alaskan Native students was 17.4% and the graduation rate from 2-year private for-profit institutions for that group was 59.2%. The graduation rate for Native American/Alaskan Native students at 2-year private not-for-profit institutions were extremely low as well (15.3% overall; 10.3% for males), especially compared to the graduation rate of Native American/Alaskan Native students at 4-year private not-for-profit institutions (59.2%) and compared to the graduation rate of students in all other racial/ethnic categories. At 2-year private not-for-profit institutions, the graduation rate of Native American/Alaskan Native female students (18.9%) was markedly

higher than was the graduation rate for Native American/Alaskan Native male students (10.3%).

The lowest overall graduation rate at 2-year institutions was among Black students (25.3%). At 2-year institutions, the graduation rates for Black students overall were 11.9% at public institutions, 43.6% at private not-for-profit institutions, and 49.2% at private for-profit institutions (Table 2.52; Snyder & Dillow, 2012).

Overall, graduation rates for students in all racial/ethnicity categories were much lower at 2-year public institutions than at 2-year private institutions. In addition, female students of all race/ethnic categories had higher graduation rates than did male students at virtually all 2-year institutions. Finally, graduation rates varied significantly by race/ethnicity.

Retention Rates

Student retention is a major concern for students and higher education. Student engagement influences student retention. Nonengaged students are less likely to be retained. A major goal of student engagement is to increase student retention. The data for retention rates reflect students who returned to higher education the following fall (Snyder & Dillow, 2012, p. 252)

Student retention rates are related to full-time and part-time enrollment. Nationally in 2010, there were clearly higher rates of retention for full-time students than for part-time students at postsecondary institutions. That is not surprising as, students enrolled part time may have had significant nonacademic obligations and commitment (e.g., family, work) than did students enrolled full time.

At 4-year public and private institutions in 2010, over three-quarters of full-time students returned the following fall, 79.5% at public institutions and 80.0% at private not-for-profit institutions (Table 2.53; Snyder & Dillow, 2012). In contrast, only approximately half of students enrolled part time returned, 50.0% at public institutions and 46.8% at private not-for-profit institutions. The retention rates at 4-year private for-profit institutions were lower. At all 4-year postsecondary institutions in 2010, half or fewer than half of students enrolled part time returned the following fall.

Table 2.53

National Retention Rates (%) by Full-Time and Part-Time Enrollment, 2010

Retention rate	Public	Private not-for-profit	Private for-profit
4-year institutions			
Full time	79.5	80.0	52.3
Part time	50.0	46.8	37.5
2-year institutions			
Full time	59.9	59.0	67.4
Part time	41.4	52.6	53.0

Note. Adapted from *Digest of Education Statistics, 2011* (NCES 2012-001), by T. D. Snyder & S. A. Dillow, 2012, pp. 90, 250.

Nationally, the overall retention rates at 2-year public and private not-for-profit institutions were significantly lower than were the rates at 4-year public and private not-for-profit institutions in 2010 (Table 2.53; Snyder & Dillow, 2012). The retention rates for students enrolled full time at 2-year public (59.9%) and private not-for-profit institutions (59.0%) were similar; however, the retention rate for students enrolled part time was higher at 2-year private not-for-profit institutions (52.6%) than at public institutions (41.1%). At 2-year public institutions only 41.4% of students enrolled part time returned the following fall.

The retention rates at 2-year private for-profit institutions for students enrolled full time (67.4%) and part time (53.0%) were higher than those at 2-year public and private not-for-profit institutions.

Student Employment

Student employment was one student characteristic that was examined in this research as it can be one of the greatest challenges to student engagement. Millions of students are employed while enrolled in college or university. Nationally in 2010, for students 16–24 years of age, there were not major differences between student employment rate by type of institution or gender (Snyder & Dillow, 2012). The overall employment rates for White students were higher than were those for students from other racial/ethnic categories. Among students 16–24 years of age, 73.4% enrolled part time were employed and 39.8% enrolled full time were employed.

Institution type. Within the parameters of full-time and part-time enrollment, overall there were not great differences in employment rates by type of institution (Snyder & Dillow, 2012). As shown in Table 2.54, for students 16–24 years of age, employment rates at 2-year higher education institutions for students enrolled part time (75.5%) and full time (40.3%) were slightly higher than at 4-year institutions for students enrolled part time (71.5%) and full time (39.6%). It should be noted that the data reflect information for students 16–24 years of age, and at community colleges, few students are age 16 or 17 and many students are over 24 years old.

Table 2.54

Nationwide Postsecondary Employment of Students 16–24 Years of Age by Full-Time and Part-Time Enrollment and Institution Type, October 2010

Institution type	Employment	
	Enrolled full time (%)	Enrolled part time (%)
4-year		
Public	40.8	70.4
Private	35.6	78.6
Total	39.6	71.5
2-year		
Public	40.6	74.7
Private	35.5	
Total	40.3	75.0
Total-2010	39.8	73.4

Note. Adapted from *The Condition of Education 2012*, by S. Aud et al., 2012, pp. 92–93.

Gender. Nationally in 2010, female students 16–24 years of age had slightly higher employment rates than did male students in the same age group (Snyder & Dillow, 2012). As shown in Table 2.55, the employment rates for female students enrolled part time (73.8%) and full time (42.4%) were slightly higher than were the rates for male students enrolled part time (72.9%) and full time (36.7%).

Table 2.55

Nationwide Postsecondary Employment of Students 16–24 Years of Age by Full-Time and Part-Time Enrollment and Gender, October 2010

Gender	Employment	
	Enrolled full time (%)	Enrolled part time (%)
Female	42.4	73.8
Male	36.7	72.9

Note. Adapted from *The Condition of Education 2012*, by S. Aud et al., 2012, pp. 92–93.

Race/ethnicity and enrollment status. In 2010, the employment rates were similar for White students, Black students, and Hispanic students 16–24 years of age who were enrolled part time (Snyder & Dillow, 2012).. However, for students employed full time, the employment rate for White students was slightly higher than that for students from other race/ethnic categories (Table 2.56).

Table 2.56

National Postsecondary Employment of Students 16–24 Years of Age by Full-Time and Part-Time Enrollment and Race/Ethnicity, October 2010

Race/Ethnicity	Employment	
	Enrolled full time (%)	Enrolled part time (%)
White	43.6	76.4
Black	33.3	65.9
Hispanic	34.9	71.9
Asian	30.5	
Pacific Islander		
American Indian/Alaska Native		
Two or more races	36.4	

Note. Adapted from *The Condition of Education 2012*, by S. Aud et al., 2012, pp. 98–99.

Cost of Postsecondary Education

The cost of education is a major barrier to higher education. Nationally, the cost of attending 4-year institutions per year is more expensive than attending 2-year institutions (Snyder & Dillow, 2012). In addition, within 4-year and 2-year institutions, there are significant differences in the average cost of postsecondary education. The range of average yearly educational costs to attend 4-year institutions in 2010–2011 was from \$7,933 for students living with family off campus to almost \$39,772 for students living on campus at 4-year private not-for-profit institutions (Table 2.57). For the data reported, the total cost of

attending higher education includes the sum of published tuition, required fees, books and supplies, the average cost for room, board, and other expenses (Snyder & Dillow, 2012, p. 98).

For students living on campus, the approximate yearly cost at 4-year institutions was \$39,772 at private not-for-profit institutions, \$30,130 at private for-profit institutions, and \$20,114 at in-state public institutions (Table 2.57; Snyder & Dillow, 2012). Hence, the cost of attending in-state, 4-year public institutions (\$20,114) was about half the cost of attending 4-year private not-for-profit institutions (\$39,130). The cost of attending private not-for-profit institutions was about \$10,000 more than any other type of postsecondary educational institution.

Table 2.57

National Average Cost of Attending Postsecondary Educational Institutions by Institution Type, 2010–2011

Institution type	Cost	
	4-year (\$)	2-year (\$)
Public (in-state)		
On campus	20,114	12,398
Off campus, living with family	12,561	7,933
Private not-for-profit		
On campus	39,772	24,654
Off campus, living with family	31,630	17,334
Private for-profit		
On campus	30,130	29,587
Off campus, living with family	20,226	21,143

Note. Adapted from *The Condition of Education 2012*, by S. Aud et al., 2012, pp. 98–99.

It is well known that, at less than \$8,000, the cost of attending a 2-year public community college, especially while living at home (which is common for many community college students), is much less than the cost of attending a private or 4-year institution. The data confirm that the cost of attending the first 2-years at a community college can be much more reasonable than other options (economic accessibility is a goal of community colleges). However, it should be noted that the high number of students enrolled in California community colleges, and the generally low cost of tuition at the California community college system, serves to lower the overall average national cost of 2-year public institutions.

The annual cost to attend 2-year private for-profit institutions (\$29,587) was similar to the annual cost to attend 4-year private for-profit institutions (\$30,130). However, the cost to attend 2-year private not-for-profit institutions (\$24,654) was about \$15,000 a year lower than the cost to attend 4-year private not-for-profit institutions (\$39,130). In addition, the cost to attend 2-year not-for-profit institutions (\$24,654) was about \$5,000 cheaper than at 2-year for-profit institutions (\$29,587).

Grants, Scholarship, and Loans

Lack of financial resources for students is one of the greatest barriers to higher education (especially for low-income students). Student grants and scholarships, which are available categorically for some students (e.g., financial aid), do not need to be repaid, whereas student loans are required to be repaid. This section reviews the amount and percentage of grants, scholarships and loans awarded to students at public institutions.

Nationally in 2010, the majority of students at public institutions received grants, scholarships, or loans. The amount and percentage of grants and scholarships were higher at 4-year public institutions than at 2-year public institutions (Aud et al., 2012). In addition, at

both 2-year and 4-year public institutions, the percentage of grants and loans received were higher than were the percentage of grants and scholarships (which was higher than the percentage of just loans). At 4-year public institutions in 2010, 81.5% of students received grants and loans, 66.7% of students received grants and scholarships, and 50.0% received loans. The average amount of the grants and scholarships was \$6,931, and the average amount of the loans was \$6,063 (Table 2.58).

In 2010, the percentage and amounts of grants, scholarships and loans was lower at 2-year public institutions than at 4-year public institutions (Table 2.58). The percentage of students who received grants and loans at 2-year public institutions (70.3%) in 2010 was lower than at 4-year public institutions (81.5%), however the percentages of students who received grants and scholarships at 2-year public institutions (63.0%) and 4-year public institutions (66.7%) were similar. Yet, the average amount of the awards was significantly lower at 2-year public institutions (\$4,544) than at 4-year public institutions (\$6,931). In addition, less than half as many students at 2-year public institutions (23.7%) received loans than at 4-year public institutions (50.0%). Similarly, the average amount of the loans was lower at 2-year public institutions (\$4,627) than at 2-year public institutions (\$6,063).

Table 2.58

Financial Aid Received by Students Nationwide, 2010

Financial aid type	4-year institutions			2-year institutions		
	%	<i>n</i>	Average amount (\$)	%	<i>n</i>	Average amount (\$)
Grants & loans	81.5	832,600		70.3	550,500	
Grants & scholarships	66.7	681,400	6,931	63.0	493,800	4,544
Loans	50.0	511,000	6,063	23.7	186,000	4,627

Note. Adapted from *The Condition of Education 2012*, by S. Aud et al., 2012, pp. 100–101.

In 2009–2010, about twice as many students at all 4-year public and private institutions received grants and loans ($n = 1,492,4000$ students), as compared to similar students at 2-year public and private institutions ($n = 831,300$). More specifically, at public institutions, 81.5% students at 4-year public institutions received grants and loans ($n = 832,000$) compared to 70.5% of students at 2-year public institutions who received grants and loans ($n = 550,500$). The percentage of students at public 2-year institutions who took out loans ($n = 186,000$) was more than half the number of students at public 4-year institutions who took out loans ($n = 511,000$).

Expenditures in higher education affect the ability of students to pursue postsecondary education. Higher education is big business, especially at 4-year institutions and private institutions. In 2009–2010 a total of \$455.414 billion was allocated for higher education. For all postsecondary institutions, 63.0% was spent by public institutions (\$286.996 billion). About a third (32.5%) of all expenditures in higher education (\$148.045 billion) supported private not-for-profit institutions, and less than 5% of expenditures (4.4%, 20.373 billion) supported private for-profit institutions (Aud et al., 2012).

Of the total \$286.996 billion that was spent on public institutions, 81.8% (\$234.820 billion) was spent on 4-year public institutions as compared to less than 18.1% (\$52.175 billion) spent on 2-year public institutions. Yet, of the nearly 14 million students ($n = 13,704,290$) who attended public 2-year public institutions and 4-year public institutions in 2010, there were more students who attended 2-year public institutions (52.6%, $n = 7,218,038$) than attended 4-year public institutions (47.3%, $n = 6,486,252$). In 2010, 731,186 more students attended 2-year public community colleges than 4-year public institutions.

Two-year public institutions enrolled more than half of all students at public institutions yet received less than 20% of allocations (Aud et al., 2012).

Nationally in 2010, of the more than \$455 billion spent on postsecondary education, the single most common expenditure at all institutions was on instruction. At 2-year public institutions 35.2% of expenditures was spent on instruction compared to 25.3% of expenses at 4-year public institutions (Aud et al., 2012).

National Earnings and Labor Force Participation

Student engagement helps students achieve academic attainment. Historically, there has been solid evidence for a strong positive correlation between level of education achieved and earnings. Many students invest in higher education in hopes of improving their financial earnings.

National data revealed that earnings and labor force participation varied by race/ethnicity and gender in addition to education achievement. On average, students with more education earned more than did students with less education, male students earned more than did female students, and White students earned more than did students of color (other than Asian students who had the highest earnings). The following national data regarding earnings and labor force participation were based on 2010 median annual earnings and percentage of full-time, full-year wage and salary workers 25–34 years of age in the labor force (Aud et al., 2012, p. 288).

Educational attainment. A major motivation for obtaining a higher education is the potential for increased earnings. Student engagement may help student attain academic achievement, which in turn may result in increased earnings and other benefits (see chapter 1 for additional discussion). The data below provide information on 2010 median annual

earnings and percentage of full-time wage and salary workers 25–34 years of age by level of education and may be the evidence “proof in the pudding” for student engagement resulting in student academic achievement. The relation between education and income has been evident for many years, and the data below clearly show a strong, positive correlation between educational attainment and work force participation

Nationally, the overall median earning in 2010 was \$37,400 with 61.9% labor force participation (Table 2.59; Aud et al., 2012). More specifically, students who had completed high school (or equivalent) earned nearly \$9,000 a year more, with a median earning of \$29,000, than did students who had not complete high school (median income = \$21,000). Likewise, students who had earned an associate’s degree (median income = \$37,000) enjoyed an increase of over \$7,000 in earnings compared to those with a high school degree (median income = \$29,900), and students with a bachelor’s degree (median income = \$45,000) earned \$8,000 more a year than did those with an associate’s degree. Similarly, students with a master’s degree (median income = \$54,700) earned almost \$10,000 a year more than did students with a bachelor’s degree (Table 2.59). Overall, students with a master’s degree earned about two and a half times more annually than did students who had not completed high school. According to the data, “education pays.” The data provide a clear illustration of the knowledge economy.

The overall percentage of labor force participation in 2010 for that cohort was 61.9%. As with earnings, the percentage of labor force participation was positively correlated with educational attainment (Table 2.59, Aud et al., 2012). Individuals with less than a high school education had markedly lower earnings and lower rates of work force participation than did those who had attained higher levels of education.

Table 2.59

National Earnings and Labor Force Participation by Educational Attainment for Full-Time, Full-Year Wage and Salary Workers (25–34 Years of Age) by Gender, 2010

Education level	Work force participation (%)			Annual median earnings (\$)		
	Overall	Male	Female	Overall	Male	Female
Less than high school diploma	44.9	47.4	39.4	21,000	24,000	17,800
High school diploma/GED	57.0	60.6	51.1	29,900	32,800	25,000
Some college	58.1	62.0	53.6	32,900	37,900	29,500
Associate's degree	63.6	68.6	59.1	37,000	39,900	34,700
Bachelor's degree	71.2	75.4	67.2	45,000	49,800	40,000
Master's degree or greater	71.7	74.0	70.0	54,700	64,200	49,800
Overall	61.9	64.5	58.7	37,400	39,900	34,900

Note. Adapted from *The Condition of Education 2012*, by S. Aud et al., 2012, p. 288.

Gender. Nationally, males had higher earnings and higher rates of labor participation than did females in every category of education (Table 2.59, Aud et al., 2012). Overall, males (median income = \$39,900) on average earned \$5,000 more a year than did females (median income = \$34,900). Likewise, the overall participation rate in the labor force for males was almost 6% higher (64.8%) than was the participation rate for females (58.7%). Both males and females with less education had significantly lower earnings and work force participation than did those with more education. In addition, both males and females with associate's, bachelor's, and master's degrees realized marked increases in salaries at each level of education.

For males, the average earning during 2010 was \$39,900 with a work force participation of 64.5% (Table 2.59; Aud et al., 2012). There was an almost \$9,000 annual difference between males with a high school diploma (median income = \$32,800) and those without a high school diploma (or equivalent; median income = \$24,000). Males with a bachelor's degree (median income = \$49,800) earned nearly \$10,000 more in salaries than

did those with an associate's degree (median income = \$39,900), and males with a master's degree (median income = \$64,200) earned nearly \$15,000 more than did those with a bachelor's degree (median income = \$49,800). Thus, males with a master's degree earned more than two and half times more than did males with less than a high school diploma.

The 47.4% workforce participation rate for males without a high school degree was much lower than for males with more education (Table 2.59; Aud et al., 2012). Generally, the higher the education level reached by males, the higher the labor participation rate, although those with a master's degree had a lower labor participation rate (74.0%) than did males with a bachelor's degree (75.4%). However, as reported above, the salaries were markedly higher for males with master's degrees than for males with bachelor's degrees.

Females with less than a high school degree, as with males, had markedly lower earnings and labor force participation. The annual earnings and workforce participation were higher for females with an associate's degree (59.1%, median income = \$34,700) compared to females with a bachelor's degree (67.2%, median income = \$40,000), and the earnings for females with a master's degree (median income = \$49,000) were almost \$10,000 more a year than females with a bachelor's degree (Table 2.59).

Race/ethnicity. Nationally in 2010 there were significant differences between earnings and labor force participation rates for students from different race/ethnicity categories (Aud et al., 2012). The average earnings for Asian students (median income = \$45,700) was \$5,700 more a year than for White students (median income = \$40,000), and both groups had higher earnings than the overall average for all students (median income = \$37,400; Table 2.60). The remaining categories of racial/ethnic students earned less than the average overall median income of \$37,400 for all students: two or more race students,

Table 2.60

National Earnings and Labor Force Participation by Educational Attainment for Full-Time, Full-Year Wage and Salary Workers (25–34 Years of Age) by Race/Ethnicity,^a 2010

Race/ethnicity	Work force participation (%)					Annual median earnings (\$)				
	Overall	Asian	White	Black	Hispanic	Overall	Asian	White	Black	Hispanic
Less than high school diploma	44.9		39.5	30.5	50.4	21,000		25,000	20,300	19,900
High school diploma/GED	57.0	55.9	57.1	53.6	59.0	29,900	29,200	32,000	25,000	27,800
Some college	58.1	58.2	57.0	56.2	64.5	32,900	34,700	34,800	29,300	31,700
Associate's degree	63.6	56.5	63.9	61.5	65.1	37,000		39,700	31,400	33,900
Bachelor's degree	71.2	72.2	71.5	71.1	68.1	45,000	54,000	45,900	39,500	41,700
Master's degree or greater	71.7	69.4	72.3	76.5	68.2	54,700	68,300	54,300	49,100	48,800
Overall	61.9	65.1	63.3	57.7	59.4	37,400	45,700	40,000	31,600	30,000

Note. Adapted from *The Condition of Education 2012*, by S. Aud et al., 2012, p. 288.

^aData for ethnic groups other than those listed were limited. Work force participation rates for other ethnic groups were as follows: Native Indians/Alaskan Native students (with annual median earnings of \$31,500, 52.9%; Native Hawaiian/Pacific Islander students, 62.9%; two or more races category (with annual median earnings of \$34,800), 60.2%.

median income = \$34,800; Black students, median income = \$31,600; American Indian/Alaskan Native students, median income = \$31,500; and Hispanic students, median income = \$30,000 (data were not available for Native Hawaiian/Pacific Islander students).

Labor force participation rates overall mirrored the data for earnings. Two findings of note included a slightly lower labor force participation rate for Asian students with a master's degree (69.4%) compared to Asian students with a bachelor's degree (72.2%) (usually higher academic attainment was positively correlated with higher rates of labor force participation) and a low rate of labor force participation rate for Black students who did not complete high school (30.5%).

Asian students had the highest earnings and labor force participation in 2010 (Table 2.60; Aud et al., 2012). The median earning for Asian students (\$45,700) was almost \$6,000 a year more than that for the cohort with the second highest earnings (White students, median income = \$40,000). Asian students with a master's degree (median income = \$68,300) had almost \$15,000 greater annual earnings compared to those with a bachelor's degree (median income = \$54,000). For those with a master's degree, the median income for Asian students was over \$14,000 higher than for White students (median income = \$54,000) and approximately \$20,000 higher than for Black students (median income = \$49,000) and Hispanic students (median income = \$48,800). Contrary to established trends, the labor force participation rate for Asian students with some college (58.2%) was higher than was the rate for those with an associate's degree (56.5%). Similarly, the labor force participation rate was higher for Asian students with a bachelor's degree (72.2%) compared to those with a master's degree (69.4%).

For White students, as with Asian students, the average earnings (\$40,000) and labor force participation (63.3%) was higher than the overall national averages (median income = \$37,400, 61.9%) in 2010 (Table 2.60; Aud et al., 2012). For White students with less than a high school diploma, the median annual earnings of \$25,000 and labor force participation of 39.5% were much lower than for those with a degree in a higher level of education. In addition, the annual earnings for White students with bachelor's degree (median income = \$45,900) were more than \$6,000 higher than for White students with an associate's degree (median income = \$39,700). Likewise, the earning for White students with a master's degree (median income = \$54,300) was \$8,400 more a year than for White students with a bachelor's degree (Table 2.60).

In 2010 the median annual earnings and work force participation for Black students was lower than that for Asian students and White students, although similar than for Hispanic students (Table 2.60; Aud et al., 2012). The median annual earnings for Black students with a bachelor's degree (median income = \$39,500) was more than \$8,000 a year higher than Black students with an associate's degree (median income = \$31,400). Correspondingly, the labor force participation rate for Black students with bachelor's degree (71.1%) was almost 10 percentage points higher than for Black students with an associate's degree (61.5%). The earnings of Black students with a master's degree (median income = \$49,100) was almost \$10,000 a year more than for Black students with a bachelor's degree (median income = \$39,500). Compared to Black students with a college degree, earnings for Black students with less than a high school degree was low (median income = \$20,300) and the work force participation was much lower than other groups (30.5%).

Nationally, Hispanic students had slightly lower earnings and labor force participation rate in 2010 than did Black students (Table 2.60; Aud et al., 2012). However, the labor force participation for Hispanic students with a high school degree (59.0%) was higher than that for Black students (53.6%), and it was much higher for Hispanic students with less than a high school degree (50.4%) compared to Black students (30.5%). Although, there were incremental increases for Hispanic students (and Black students) by educational degree, the average salary per degree was lower than that for Asian students or White students. For example, the median annual earnings for Hispanic students with a master's degree was \$48,800, whereas for Asian students with a bachelor's degree it was \$54,000.

There was limited national data on earnings and labor force participation from the Aud et al.'s (2012) report for Native Hawaiians/Pacific Islander students, American Indians/Alaskan Native students, and students identifying as being two or more races. The overall work force participation rate in 2010 for Native Indians/Alaskan Native students (52.9%) was much lower than for all other groups. The work force participation for Native Hawaiian/Pacific Islander students was 62.9%, and for students in the of two or more races category, whose annual median earnings was \$34,800, the workforce participation rate was 60.2%.

Historic Background and Context for Community Colleges and Student Engagement

Intelligence is not something possessed once and for all. It is in constant process of forming, and its retention requires constant alertness in observing consequences, an open-minded will to learn and courage in readjustment.

John Dewey

The above quote from the educational philosopher John Dewey, which emphasizes the importance of intelligence as a constant process, opens this section on the history of education. Dewey also stated that the *retention* of intelligence requires constant *alertness* in

observing consequences, an open-minded will to learn, and courage in *readjustment*

(emphasis added). It was the intent of this researcher to observe consequences with an open-minded will to learn and hopefully readjust.

This section provides key historical context for community colleges and student engagement. It is important to examine the background of community colleges to understand the historical influences on community colleges and student engagement. Until relatively recently, education was reserved for the few privileged and elite. Overall, American higher education evolved from the medieval European model (often with a liberal arts emphasis).

It could be argued that, overall, two of the most significant events that greatly opened access to higher education in the United States were the land grant movement and the community college movement. The Morrill Land-Grant Act of 1862 opened access at 4-year public universities, and the community college movement opened access at the nation's 2-year public institutions. American community colleges trace their roots from American 4-year institutions, hence the inclusion of this historical context. Because they evolved from America's 4-year institutions of higher education, community colleges are uniquely American.

Community colleges are characterized by access: financial, geographic, and academic. Community colleges (as opposed to 4-year public universities) were designed to be inexpensive and located near where students live and work. Most community colleges have open enrollment policies, and they offer transfer education, vocational education, and community education.

The profile of students at community colleges is generally different from the profile of students at 4-year institutions. Compared to students at 4-year institutions, students at

community colleges are more likely to be older, enrolled part time, first-generation students, minority students, low income students, employed, and have family responsibilities and academic challenges.

The literature reviewed below highlights significant landmarks in the history of community colleges including the 1901 establishment of Joliet Junior College, a focus on vocational education as a result of the Great Depression and World War II, the 1944 GI Bill, the 1947 Truman Commission report that helped establish a national network of community colleges, and an explosion of student enrollment in the 1960s.

Education provides opportunities. Community colleges have provided a chance for higher education for millions of individuals who otherwise may not have had that opportunity. Education = opportunity; community colleges = opportunity (access); therefore, community college education = opportunities (for millions of students). Education and community colleges are in the “opportunity business.”

Early Education

All advanced civilizations have needed higher education to train the leaders of their nation, military, and religion. Knowledge and information is power, and education can provide knowledge and information. In addition, it is a truism that those who do not know history are doomed to repeat it. Education can provide such needed knowledge of history. History is replete with people who were defeated because they did not learn lessons from history. Education can (and at times still does) separate the rulers and the ruled, the elite from the common, the dominant from the submissive, and leaders from followers. It always has been so and will continue to be so. Information, education, and knowledge offer great opportunity.

Early thinkers. History is clear that great early thinkers had a significant influence on future education (and continue to do so). Socrates (circa 470–399 B.C.), who ended up being killed (hemlock) for his teachings (non-tenured), was instructor to Plato (427–347 B.C.); Plato was Aristotle’s (384–322 B.C.) instructor, and Aristotle was Alexander the Great’s (356–322 B.C.) instructor for two years (similar to a 2-year associate’s degree). See the discussion of ASHE readers later for excellent histories of education.

Aristotle (384–322 B.C.). “All men by nature desire to know” (Aristotle, 350 B.C., Book I, Section I). Aristotle stated that, by nature, all men desire to know, although he did not report *what* men (and women) desire to know. As a professional educator, the author of this dissertation can definitively state that not all students desire to know information from formally developed and established educational curriculums. Fortunately, most community colleges also offer education (and hopefully the desire to know) in the areas of vocational education, community education, and transfer education. Aristotle also posited that by *nature* (emphasis added) men (and women) desire to know. It is beyond the scope of this writing to examine the internal motivation of why it is natural for people desire to know (or not).

Early American Education

Thomas Jefferson (1743–1826). At the dawn of our nation, Thomas Jefferson viewed education as being practical as well as liberal. Jefferson purported that education should serve the public good as well as individual needs (Phillippe, 1997). Thomas Jefferson’s view of education was similar to the current view of community colleges in that they support both practical education (e.g., vocational and community education) and liberal

education (transfer education) that serves both society (e.g., a trained workforce) and individual needs (i.e., the many benefits of an education).

1791, Tenth Amendment to the U.S. Constitution. The Tenth Amendment to the U.S. Constitution in 1791 stated that “the powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.” Therefore, because the Constitution does not give the direct responsibility for education to the federal government, constitutionally public education should be under local control. However, it could be argued that federal and state control and influence at all levels of education has grown (e.g., the current national K–12 Common Core curriculum). Although community colleges in most states answer to state regulatory bodies, generally local governing bodies still retain local oversight of community colleges (e.g., community colleges’ Board of Trustees).

1862, Massachusetts. The state of Massachusetts in 1862 became the first state in the United States to develop a public education system.

Morrill (Land-Grant) Act of 1862. The Morrill Land-Grant Act of 1862, which called to “support at least one college in every state” (as opposed to the privileged few), was one of the most significant events to open access to public 4-year institutions. A publication from the AACCC (Phillippe & González Sullivan, 2005) reported that the seeds of American community colleges were planted before the Civil War when Congress passed the Morrill Land-Grant Act of 1862. President Abraham Lincoln signed the Morrill Act in 1862.

The Morrill Land-Grant Act of 1862, often referred to as just the Morrill Act, established the federalization of land-grant universities to expand access to higher education, including to those previously excluded from higher education. The Morrill Act allocated

30,000 acres of federal land per member of its congressional delegation to establish a university, hence the term land-grant. The Morrill Act emphasized teaching courses in agriculture and the mechanical arts. As with community colleges, the Morrill Act provided access to higher education for students who previously may not have had that opportunity and provided support for vocational education. Prior to the Morrill Act, higher education often focused on a traditional liberal arts education. At about the same time, the concept of a basic education for all Americans was supported with the expansion of public high schools that provided education beyond the elementary grades.

1874, the Kalamazoo decision. In 1874, the Michigan Supreme Court ruled that school districts could operate comprehensive high schools from public school funds (*Stuart et al. v Kalamazoo Board of Education*, 1874). That ruling set the precedent for developing high schools, which would provide sites for future community colleges. The funding mechanism from that decision was key to the development of public high schools.

Morrill Agricultural Act of 1890. The second Morrill Act was passed in 1890. This act authorized the withholding of funds from states that refused admission to land-grant colleges based on race unless those states provided separate institutions for minorities. The act mandated that non-Whites have access to land-grant institutions, albeit it came in the form of what became known as Historically Black Colleges and Universities. The second Morrill Act expanded higher education to include many Blacks who previously were unable to attend college, a concept similar to community colleges, which serve a high percentage of students of color who otherwise may not have the opportunity for a higher education.

1880–1920, progressive education and John Dewey (1859–1952). From 1880–1920, American higher education was influenced by the “scientific” principles of assessment

of education, the growing profession of teachers as educators, a focus of acculturation through schooling for the throng of new immigrants, and the writings of John Dewey.

John Dewey had a dramatic impact on higher education in the last part of the 19th century and first part of the 20th century. He received his Ph.D. from Johns Hopkins University and taught at the University of Chicago and Columbia (and other major institutions). While at the University of Chicago, Dewey participated in the “laboratory school.” As a result, there is a connection between Dewey and the University of Chicago’s relationship with the nation’s first junior/community college in 1901, Joliet Junior College.

Although Dewey wrote on a variety of subjects (e.g., philosophy, psychology, and politics), perhaps his most significant work in higher education was his 1916 work *Democracy and Education*. As with many of his writings, this publication was more philosophical than practical. The beginning of Dewey’s book examined functions of education as a necessity of life—a social function; providing direction and growth; as conservative and progressive—as well as aims in education, the democratic conception in education, vocational aspect of education, and the philosophy of education. In addition, Dewey wrote on thinking, theories and philosophies of education, theories of morals, theories of knowledge, thinking in education, educational values, natural development and social efficiencies as aims, the individual and the world, labor and leisure, and play and work. He also expounded on disciplines/curriculum/ subject matter such as interest and discipline, intellectual and practical studies, physical and social studies, science, geography and history, the nature of subject matter, and the nature of method. The 1916 work of Dewey had a significant impact on early American higher education.

Three years prior to the writing of his comprehensive *Democracy and Education* in 1916, Dewey (1913) wrote the short book *Interest and Effort in Education*. In addition, in 1938, 22 years after writing *Democracy and Education*, Dewey published the short book *Experience and Education*, which is considered to hold Dewey's most concise views and ideas of the needs, problems, and possibilities for higher education.

The author of this dissertation was able to witness and learn firsthand about the effects of early student engagement practices from the University of Chicago Laboratory School. The author had an elderly friend, Mary Isabel Roberts, who as a child attended the University of Chicago Laboratory School; she or her family may have known Dr. Dewey. As a child, she and her family lived in a grand house (seen by the author) about a block from the world famous Museum of Science and Industry and about two blocks from Lake Michigan in Chicago. Her father was a famous architect who worked on the design of the Rockefeller Memorial Chapel at the University of Chicago. Ms. Roberts shared some fascinating experiences she had as a young student at the University of Chicago "lab school." Not surprising, she described many her experiences (including student engagement type activities) at the school as very progressive and described some specific activities and assessments/evaluations in which she participated while at the school. Perhaps influenced by her early familial and educational environment, she was one of the best educated, most independent, creative, talented, and fascinating people the author has ever met. Later, while attending several Midwest faculty seminars, the author was able to spend the time at the University of Chicago—an amazing campus, library (and faculty club).

Early 20th Century

There is general acceptance that the beginning of the community college movement is marked by the establishment of Joliet Junior College (JJC) in 1901. William Rainey Harper and J. Stanley Brown were instrumental in the creation of JJC (JJC, 2008). Prior to the establishment of JJC in 1901, there were a number of private 2-year colleges that, in part, trained teachers for the growing system of public education. In addition, there were some early colleges that started out as private 4-year colleges but, due to financial problems, discontinued the last two years of college.

Similar to the work at JJC, at about the same time other educational leaders, including Stanford University President David Starr Jordan and University of Missouri President William Ross, promoted the idea that high schools or small colleges could offer the first 2-years of college work.

1901, Joliet Junior College

I have a plan which is at the same time unique and comprehensive, which I am persuaded will revolutionize University study in our country.

William Rainey Harper

I took the opportunity of this meeting to lie before those assembled our plan for the degree of associate.

William Rainey Harper

Joliet Junior College, in Joliet, Illinois, is the nation's oldest continuous operating 2-year college. JJC began as an experimental postgraduate high school program—a high school based community college. JJC offered a fifth and sixth year of high school education (grades 13 and 14) that was comparable to the first two years of college. Their first class had six students (JJC, 2009).

The establishment of JJC was a result of the collaborative efforts of William Rainey Harper, President of the University of Chicago, and J. Stanley Brown, superintendent of Joliet Township High School. Harper's and Brown's plan was to create an academic institution that was comparable to and paralleled the first two years of college while students remained in the community. The two statements above reveal Harper's vision for the beginning of JJC (and of community colleges)

As president of the University of Chicago, Harper reasoned that with crowded classrooms and often underprepared students in the first 2 years of university (still a challenge at times today), resources could be used more judiciously on university juniors and seniors. He believed the first 2 years of college could be taught elsewhere (hence the junior college/community college model).

As superintendent of Joliet Township High School, Brown saw increasing numbers of high school graduates who desired an university education yet who lacked needed funds, lacked proper academic preparation for the highly competitive university environment, and for a variety of reasons (including economic), desired to remain close to home. As a result, Brown created courses for a fifth and sixth year of high school (grades 13 and 14) and later persuaded university professors to grant college credit for those courses (not dissimilar to the practice of community college dual enrollment today).

Overall, primarily two educational purposes drove the creation of JJC. The first purpose was to increase the access to higher education for high school graduates. The second was that the University of Chicago was looking for a way to divest itself of responsibility to prepare the "foundations of learning" and "basic learning and thinking skills." The first 2 years at the University of Chicago typically focused on the foundational work of basic

thinking and learning skills. It was Brown's desire to have JJC help prepare students to transfer to the University of Chicago.

In December 1902, the Board of Trustees sanctioned the program and made postgraduate course tuition free. By 1915, the junior college enrollment had grown to such an extent that it necessitated the addition of a "junior college wing." In 1916, JJC had 82 students. JJC was the nation's first major facility constructed specifically for use by a public junior college (JJC, 2008).

The genesis for community colleges was to bridge the gap between high school graduates and the rigors of the university life. Many community college students today still need that assistance and bridge from high school to university. Two-year colleges began to emerge to prepare students for advanced education and train people to work in emerging industries. Those early 2-year colleges were called junior colleges—between high schools and universities. Early junior colleges usually were associated with local school districts or universities.

After 112 years, JJC is still educating students. The author of this dissertation had the opportunity to visit that historical college and experience its large and sprawling campus. JJC is rightfully proud of its heritage as the nation's first junior college and is one of the colleges that participated in this study of student engagement.

1904, the Wisconsin idea. The University of Wisconsin in 1904 reported that its mission was to help the general public (including the use of extension services) and to provide support to the state government. The university declared that the entire state was its campus. Those principles helped establish the relationship between universities and later community colleges and the establishment of educational opportunities throughout the state.

The 1910s

The goal of increasing educational accessibility to higher education seemed to have worked. By 1910, 5% of American 18 year olds were enrolled in colleges or universities, including the newly created junior colleges. Six years after the establishment of JJC in 1907, California passed legislation that authorized high schools to offer postgraduate courses. That legislation allowed high schools to offer the first 2 years of college for its high school graduates. Ten years later in 1917, California provided state and county funding for junior college students. Four years after, by 1921, California had established 21 two-year colleges (governed by local boards), the most in the nation. Within 25 years of the initiatives of California, six other states (Iowa, Missouri, Kansas, Michigan, Texas, and Missouri) had established community colleges.

1910, Phi Theta Kappa Honor Society. Phi Theta Kappa was established in 1910 to support and acknowledge academic achievement for students at 2-year institutions. The honor society began as Kappa Phi Omicron at Stephen's College in Columbia, Missouri in 1910. In 1918, the name Phi Theta Kappa was chosen. Phi Theta Kappa was recognized in 1929 as the official honor society for 2-year colleges. Phi Theta Kappa has a long and rich history and tradition of making significant contributions to the community colleges.

1914, Smith-Lever Act. The Smith-Lever Act in 1914 created cooperative extension services at land grant colleges. Education through cooperative extension later was incorporated into colleges and universities.

1917, Smith-Hughes Act. The 1917 Smith-Hughes Act promoted vocational education in the states by providing funds to hire teachers in applied fields such as

agriculture and the trades (similar to the Morrill Act). Historically, community colleges have had a strong and rich tradition of vocational education.

1917, junior college accreditation standards. In 1917, the North Central Association of Schools and Colleges created accreditation standards for public and private junior colleges. The standards included areas such as admission policies, faculty qualifications, and minimum funding levels. Standards for community colleges have continued to evolve.

1918, compulsory schooling. By 1918, all states in the United States had mandated compulsory schooling.

The 1920s

1920–1921, American Association of Junior Colleges. The American Association of Junior Colleges (AAJC) was created in 1921. Meetings were held in St. Louis, Missouri on June 30–July 01, 1920, and in Chicago, Illinois in February of 1921. The name of the organization was later changed to the American Association of Community and Junior Colleges, and in 1992 the name once again was changed to its current name, the American Association of Community Colleges. The AACC also includes junior colleges, technical colleges, private colleges, and proprietary 2-year institutions. In 1930, the AACC began publishing its own journal, known today as the *Community College Journal*. The AACC also represents higher education institutions in Japan, Great Britain, Korea, Puerto Rico, and the United Emirates.

1925, the junior college movement. In 1925 (88 years ago), the landmark book *The Junior College Movement* was written by Leonard Koos. Koos described the development of public junior colleges, types of colleges, geographic distribution, enrollments, and programs

of study. Koss's (1925) book was divided into 10 major chapters: I, "Scope and Variety of the Movement" (pp. 1–15); II, "Current Conceptions of the Special Purposes of the Junior College" (pp. 16–28); III, "The Junior College in Its Isthmian Function—The Offering" (pp. 29–63); IV, "The Junior College in Its Isthmian Function—Instructors and Instruction" (pp. 64–99); V, "The Junior College in Its Democratization Function" (pp. 100–165); VI, "The Junior College in Its Conserving and Socializing Influences" (pp. 166–188); VII, "The Trend of Reorganization in Higher Education" (pp. 189–263); VIII, "Overlapping in High School and College" (pp. 264–312); IX, "Evaluating the Types of Junior College" (pp. 313–373); and X, "The Problems of Location and Maintenance" (pp. 374–420). Also included was an appendix with a selected bibliography (pp. 421–427), an index (pp. 429–436), and 46 diagrams. Each of the major chapters was further subdivided. The early bibliography is of historical interest (some of the entries contain information from a short annotated bibliography).

Early information that related to student engagement was found in chapter VI, "The Junior College in Its Conserving and Socializing Influence." The first part of that chapter focused on the junior college and home influences during immaturity (including statements of parents with children in public junior colleges). That chapter also examined effects of class size (as with student engagement today), student office holders, and the effects of extracurricular activities (i.e., divisions of athletic, literary, musical, and social and religious) (Koos, 1925, p. 182).

1928, first state junior college board. Mississippi was the first state to organize a statewide governing board with specific oversight responsibility for the public junior colleges

within its boundaries. The state's governing board worked to develop a network of junior colleges that balanced transfer and vocational programs.

1930, the *Community College Journal*. The first issue of the *Community College Journal* was published by Stanford University Press in partnership with the AACC (then the AAJC) and the Stanford School of Education.

1931, *The Junior College*

*Going to college has become the great American habit.
The junior college should be the "people's college" available to all.*
Walter Crosby Eells

In the quote above, over 80 years ago, Walter Crosby Eells (1931) wrote about the access of college for Americans and how junior colleges should be the "people's college" and available to everyone. That is still true today.

Thirty years after the foundation of JJC in 1901 and 6 years after Koos' 1925 book, Eells (1931) wrote the comprehensive book, *The Junior College*. Eells's historically important book documented the curriculum and growth of public junior colleges and reported on the growing importance of the accessibility of junior colleges. The book was divided into three main sections: "Part One, The Development of the Junior College" (pp. 3–350); "Part Two, Organization and Administration of the Junior College" (pp. 353–645); and "Part Three, Place of the Junior College in American Education" (pp. 649–803). There were also three appendixes, an index (pp. 805–833), and 43 figures. That early book on junior colleges is thorough and well documented.

Early information that relates to student engagement activities is found in chapter XXIII, "Student Activities." On page 626, in a section entitled "Problems Connected with Student Activities," is a discussion of the research on students engaged in 13 student

activities (e.g., athletics, school clubs, and student offices). That chapter is clearly an early attempt to identify the relationship between student activity and student outcomes (e.g., student engagement).

The Great Depression and 1930s

The Great Depression played an important role with community colleges by emphasizing a focus on vocational education and training. That focus has remained at community colleges. Historically, economically challenging times often have resulted in increased enrollment in community colleges, especially for vocational and workforce education and training (e.g., a need for vocational training or retraining).

In the 1930s there were more than 200 public and 300 private 2-year colleges in the nation. These institutions provided great assistance during the Great Depression. As in other times of economic distress, during the Great Depression, with jobs scarce, students enrolled in community colleges for help with employment training. The focus on vocational training at community colleges was strengthened during the Great Depression. Later, the focus on career training was greatly expanded with the massive number of returning soldiers following World War II.

The 1940s

Historically two very important events for community colleges occurred in the 1940s. The first was the 1944 GI Bill and second was the 1947 Truman Commission report.

1944, The Servicemen's Readjustment Act (GI Bill)

The Junior College movement, including its philosophy, its facilities, and its momentum, had to be geared to the nation's needs as we found ourselves in a state of war.

James Miller

The junior colleges of America are well equipped to furnish the answer to the educational problems of our young veterans.

General Omar Bradley

The quotes above emphasize how the war and the mass return of U.S. veterans greatly impacted community colleges (especially through increased enrollment and vocational education and training). In 1944, near the end of World War II, the U.S. Congress passed the Servicemen's Readjustment Act, commonly referred to as the GI Bill. As with the establishment of community colleges, the GI Bill opened access to millions of Americans who may have not had access to higher education.

Through the GI Bill, the federal government provided stipends for tuition, fees, books, other educational material, as well as living expenses for World War II veterans attending college. The GI Bill was the first major effort by the federal government to provide student aid on a large scale. As a result of the GI Bill, many social and economic barriers to higher education were removed and, as a result, many women and people of color were enrolled in higher education.

Community colleges played a major role in providing transfer and, especially, vocational education and training to millions of returning veterans. The nation was undergoing rapid technological advances, and industry was retooling from the war. Community colleges helped fill the vocational and workforce needs of returning veterans and the nation.

More than 2.2 million veterans, including more than 60,000 women and approximately 70,000 Blacks attended college under the GI Bill. Overall more than 8 million veterans received education benefit from the GI Bill during the next 7 years (Levinson, 2005, p. 45). Funding for the GI Bill ended in January of 1965.

1944–1947. Between 1944 and 1947 the enrollment at community colleges doubled as more than 250,000 new students were enrolled.

1947, The Truman Commission Report. Three years after the passage of the GI Bill, the release of the Truman Commission Report served as one of the most important events in the community college movement. On December 11, 1947, the White House released the President’s Commission on Higher Education report, *Higher Education for American Democracy*, commonly referred to as the Truman Commission Report.

The commission called for public higher education for all Americans in order to provide universal educational access to “all able young people” and outlined the importance of providing “general education.” More specifically, the commission asserted that 49% of high school graduates could profit from 2 years of education beyond high school and sought ways to offer more opportunities for higher education. The commission also recommended the establishment of a national publically supported network of community colleges that would charge low or no tuition.

The commission called for comprehensive programing with an emphasis on civic responsibility, the expansion of adult education programs, and the distribution of federal education aid to help poorer states. In addition, community colleges were charged to serve as cultural centers in the communities in which they were located. The commission was

responsible for popularizing the term *community college* by using that verbiage in the report to describe 2-year public colleges.

On December 11, 1947, the first of six volumes of the Truman Commission Report was released. Three days later, on December 14, 1947, President Truman's comments on the report were released, which included observations that colleges and universities were burdened by great overcrowding (e.g., returning veterans) and a shortage of teachers. The following historical (selected) recommendations are from that report:

- Abandonment of the European concept of higher education;
- Doubling of college attendance by 1960;
- Integration of *vocational* and liberal education (emphasis added);
- Extension of *free public education* through the *first 2-years of college* (emphasis added);
- Elimination of racial and religious discrimination; and
- Expansion of federal support for higher education through scholarships, fellowships, and general aid.

The White House subsequently released the subsequent volumes of the Truman Commission Report: volume II, *Equalizing and Expanding Educational Opportunities* (on the December 21, 1947); volume III, *Organizing Higher Education* (on January 12, 1948); volume IV, *Staffing Higher Education* (on January 25, 1948); volume V, *Financing Higher Education* (on February 1, 1948); and volume VI, *Resource Data* (in March 1948).

The 1950s

1950, *The Community College*. In 1950, the Executive Secretary (President) of the AACC, Jesse R. Bogue, wrote the historically important book *The Community College*. This

work further helped to popularize the term *community college*. Bogue's book, written over half a century ago, is comprehensive. Topics in his book include a historical context, philosophies, roles, basic functions, organization, critical problems, administrative plans, independent colleges, educational cooperation, general education, technical education, adult education, and an appendix dedicated to the influence of Alexis F. Lange. The book is thorough, well referenced, and contributes to the community college literature.

1958, National Defense Education Act. Partially due to concern over the launching of Sputnik in 1957, the United States "launched" the first large-scale student loan program. With concerns that the nation was falling behind in technical education, the U.S. Congress passed the National Defense Education Act of 1958. That act provided low-interest loans to college students and loan forgiveness to those entering the teaching profession. A component of that act, the National Defense Student Loan Program, now the Perkins Loan Program, was created. The Perkins Loan Programs continues to provide support for many community college students and programs. Community colleges continue to provide the first 2-years of higher education for many students entering the teaching profession. Community colleges provide an important educational foundation for many of the nation's teachers, an original intent of the 1958 National Defense Education Act.

The 1960s, Golden Growth

The so-called "tidal wave" of students is now at the very doors of our colleges and universities.

Jesse Bogue

There were more people and more people who wanted to go to college.

Edmund J. Gleazer, Jr.

The 1960s could be called the golden age of growth for community colleges. As the quotes above reflect, there was tremendous growth in student enrollments at the nation's

community colleges in the 1960s (and through the mid-1970s). From 1960 to 1970 there were 487 new community colleges created (an average of one community college per week) for a total of 909 by the end of the decade (Witt, Wattenbarger, Gollattscheck, & Suppiger, 1994). The 1960s also were significant for community colleges with the development of tribal colleges.

In 1962, student enrollments at community colleges increased by 13.4%. The fall of 1963 set another record with 927,000 students enrolled in community colleges. By fall of 1965, national student enrollment at the nation's community colleges reached almost 1.3 million, which was 20% of all students in higher education and 24% of all first-time college freshmen. By 1970, 1,091 community colleges existed nationwide, an increase of more than one third in 10 years (an increase of 413 institutions). Experts predicted the number of community colleges would double in the 1960s. Instead, student enrollments quadrupled in that decade. By the end of the 1960s, national student enrollment at community colleges was slightly less than 2.5 million. In addition, between 1965 and 1975, enrollment at community colleges grew by an impressive rate of almost three and one-half times (Witt et al., 1994).

Several factors resulted in great growth in community colleges (and other institutes of higher education) in the 1960s. Although the GI Bill ended in January of 1965, many veterans still attended college under the GI Bill in the first part of that decade and their many children (baby boomers) also were starting to attend college. Many of the parents of those baby boomers realized the importance of a higher education for themselves and their children. In addition, the first returning Vietnam veterans were starting to attend colleges, and other male students enrolled in college to avoid the mandatory military draft through deferments for students enrolled full time. Further, influenced by the civil rights movement

(e.g., widespread segregation in the South was decreasing and women's rights were increasing) more women, Blacks, and individuals from other oppressed groups enrolled in college. Finally, with financial federal assistance through the Higher Education Act of 1965 (reauthorized in 1972), many new students enrolled in higher education (Witt et al., 1994).

During the 1960s, the three most common types of associate's degrees offered by community colleges were the Associate of Arts, the Associate of Science, and the Associate of Applied Science degrees. The Associate of Arts and the Associate of Science degrees were designed for students transferring to 4-year institutions, whereas the Associates in Applied Science was designed for students planning to enter the workforce. Additionally, in part to meet the needs of the labor market, there were great increases in the development of certificate and training programs for vocational education and trainings at community colleges.

1960, W. K. Kellogg Foundation. In 1960, the W. K. Kellogg Foundation announced grants to establish university centers to train 2-year college leaders. As a result of that initiative, 12 universities established junior college leadership programs. Hundreds of future college leaders graduated from Kellogg Junior College Leadership Programs.

1960, California Master Plan for Higher Education. In California, representatives from the three major sectors of postsecondary education—the community colleges, comprehensive colleges and universities, and the University of California—developed a plan to voluntarily divide the responsibilities for higher education in their state between those entities.

1960, *The Junior College: Progress and Prospect*. Another classic book that provided historical context and additional information about community colleges was Leland

L. Medsker's 1960 book *The Junior College: Progress and Prospect*. This publication provides an in-depth discussion of community colleges, including both its strengths and weaknesses. Medsker provided empirical data on the success of transfer students and the academic performance of community college students. Such data relate to student engagement.

The information Medsker (1960) provided about community colleges was divided into nine chapters: "1. Realization, Expectation, and Examination"; "2. The Junior College Student" (including many demographic and other variables used in student engagement); "3. An Education Program with Many Purposes"; "4. The Transfer and Terminal Functions"; "5. Performance and Retention of Transfer Students" (including data from Illinois and Iowa); "6. Student Personnel Service in 2-Year Institutions"; "7. Faculty Attitudes on the Role of the 2-Year College" (information also used in student engagement); "8. The 2-Year College in Various States—Its Development, Financing, and Problems" (including excellent histories for Illinois and Iowa, which had 16 public 2-year institutions in 1960); and "9. The Next Ten Years." Also included are 15 appendices for colleges and universities (including data from the University of Illinois in fall 1952 and the public higher education institutions in Iowa from June 1953 to March 1955), and an index. Medsker's (1960) book, in addition to providing an excellent history of community colleges, provides information that can be used in student engagement in two of its chapters: chapter 2, "The Junior College Student," and chapter 7, "Faculty Attitudes on the Role of the Two Year College."

1960, *The Community Junior College*. James W. Thornton, Jr. wrote his first edition of *The Community Junior College* in 1960 (Thornton, 1960, 1966, 1972). Thornton's book provides an important background for community colleges. The four parts of Thornton's

book (1972, 3rd edition) include: “1. Backgrounds of the Community Junior Colleges”; “2. The Organization of Community Junior Colleges”; “3. The Community Junior College in Operation”; and “4. Issues and Opportunities.” In chapter 4 of part 1, Thornton divided the history of community junior colleges into the five categories of (a) “The Evolution of the Junior College (1850–1920); (b) “The Expansion of Occupational Programs (1920–1945)”; (c) “The Community College Concept (1945–1965)”; (d) “The Period of Consolidation (1965)”; and (e) “The American Association of Junior Colleges.”

1962, *The American College: A Psychological and Social Interpretation of the Higher Learning*. More than 50 years ago, in 1962, a comprehensive book was published that focused on the psychological and social aspects of higher learning. Nevitt Sanford was the editor of the tome (1,084 pages), *The American College: A Psychological and Social Interpretation of the Higher Learning*. His book focuses on the psychological and social aspects of higher education in a similar way as did Pascarella and Terenzini’s (1991, 2005) books *How College Affects Students*. Information from Sanford’s book, and Pascarella and Terenzini’s books, relate to student engagement. More specifically, material from Sanford’s books that can be used in student engagement include: “Part II. The Entering Student”; “Part III. Academic Procedures”; “Part IV. Student Societies and Student Cultures”; “Part V. Student Performance in Relationship to Educational Objective”; “Part VI. Interactions of Students and Educators”; “Part VII. The Effects of College Education” (with similarities to Pascarella and Terenzini’s 1991 and 2005 work); and “Part VIII. Higher Education and the Social Context.” Although not specifically focused on community college students, the information in Sanford’s book is foundational for student engagement.

1963, Higher Educational Facilities Act. Through the Higher Educational Facilities Act of 1963, communities were provided federal support to construct new campuses and enlarge existing facilities for higher education. Funds provided in this act were instrumental in the construction of the hundreds of community colleges in the 1960s.

1964, space and treasure. Point of interest, renowned film producer, screenwriter, and director George Lucas (e.g., *Star Wars*, *Indiana Jones*) attended Modesto Junior College in 1964.

1965, Higher Education Act. In the context of President Lyndon B. Johnson's Great Society programs in 1965, he signed the historically important Higher Education Act (HEA) of 1965. This act was significant for community colleges because it provided a base of financial support for millions of students and especially helped minority students, female students, and economically challenged students. The 1965 HEA consolidated several pieces of legislation that resulted in the two financial aid programs: the Educational Opportunity Grant (1965) and the Guaranteed Student Loan Program (1965), providing federal direct grants and loans to students based on need. The HEA was amended in 1972 and 1992.

There were seven titles in the original 1965 Higher Education Act. The first five titles were designed to deal more directly with issues of access: Title I strengthened community services and continuing education programs, Title II improved teacher recruitment and teacher education programs, Title III authorized financial assistance to select groups of institutions such as tribal colleges and historically black colleges and universities, Title IV created student financial aid programs, and Title V supported institutional development to institutions serving Hispanic students.

1965, Illinois Community Colleges. In 1965, the Illinois Board of Higher Education adopted a master plan for the establishment of a statewide community colleges system. Illinois House Bill 1710, the Public Junior College Act created a junior college board to oversee the statewide system. By the end of that decade Illinois had 34 public junior college districts that served over 100,000 students.

1968, League for Innovation in the Community College. B. Lamar Johnson founded the League for Innovation in the Community College to promote innovation and experimentation in community colleges. The league became the primary organization for advocating the use of technology for enhancing pedagogy at community colleges. The league limits its membership to 20 colleges that are self-selected. Information and results are shared with community colleges across the nation and internationally through a league alliance made up of more than 800 institutions from 16 different countries.

The 1970s

President Richard Nixon (1969–1974)

Other forms of postsecondary educations—such as a two-year community college . . . are far better suited to the interests of many young people.

Richard Nixon

The comment above by President Richard Nixon provided support for community colleges and suggested that they are better suited for some students.

1971–1978, federal aid for strengthening tribal colleges. Beginning with the Navajo Community College in 1971, the American Association of Community and Junior Colleges (AACJC) assisted in obtaining funding, construction, and maintenance for community colleges under the oversight of Native American tribes. The culmination of those efforts in 1978 resulted in the adoption of the Tribally Controlled Community College

Assistance Act. In 2005 there were 31 tribal colleges nationally. The author of this dissertation was able to participate in that part of community college history while working at Sinte Gleska Tribal College on the Rosebud Sioux Indian Reservation in Mission, South Dakota (a fascinating experience).

1971, *Breaking the Access Barriers: A Profile of Two Year Colleges*. An early contribution to the literature on community colleges was Leland L. Medsker and Dale Tillery's 1971 book *Breaking the Access Barriers: A Profile of Two Year Colleges*. The second section of their book provides a history of community colleges. The third and fifth sections of their book, junior college students, provides information that relates to student engagement. Additional information on community colleges includes types of education, faculty and staff, control and support for community colleges, and independent junior colleges as well as a commentary on community colleges by Joseph P. Cosand at the end of the book (pp. 155–161).

1971, Nolan Ryan. Point of interest: Hall of Fame baseball pitcher and current principal owner, president, and CEO of the professional baseball team the Texas Rangers, Nolan Ryan, attended Alvin Community College in 1971.

1972, American Association of Community and Junior Colleges. The American Association of Junior Colleges (AAJC) changed its name to the American Association of Community and Junior Colleges (AACJC) in 1972. The name of the organization would change again 20 years later, in 1992, to the American Association of Community Colleges (AACC).

1972, Association of Community College Trustees. The Association of Community College Trustees, formed in 1972, is the national organization that provides information,

skills, and other assistance to the nation's lay trustees. This association also influences policy at the national and state level.

1972, Basic Education Opportunity Grant/Pell Grant. The Higher Education Act of 1965 was reauthorized in 1972 (the first of seven reauthorizations). Through this reauthorization, the Basic Educational Opportunity Grant (BEOG), later called the Pell Grant was created. The BEOG provided financial aid directly to students rather than to institutions. Title IX of the act outlawed gender discrimination and later had a significant impact on collegiate sports programs (and at times still does).

1975, American Association of Community and Junior Colleges Presidents Academy. The Presidents Academy of AACJC was created in 1975. Membership in the academy is for chief executives of AACJC member colleges. The academy focuses on current issues affecting community colleges such as technology, policy, leadership, etc.

The 1980s

President Ronald Reagan (1980–1988)

Community colleges are a priceless treasure-close to our homes and work, providing open doors for millions of our fellow citizens . . . the original higher education melting pot.

Ronald Reagan

President Ronald Reagan reported above that community colleges are priceless treasures. He also highlighted the importance of accessibility and the great possibilities of community colleges.

1982, *The American Community College*. Also contributing to the literature of community colleges were Arthur M. Cohen and Florence B. Brawer who, in 1982, wrote the first edition of *The American Community College* in 1982 (Cohen & Brawer, 1982, 1989, 1996, 2003). The format of the book has remained essentially the same in future editions.

The main contents in Cohen's and Brawer's book on community colleges include: "1. Background"; "2. Students, Diverse Backgrounds, Purposes, and Outcomes"; "3. Faculty"; "4. Governance and Administration"; "5. Finances"; "6. Instruction"; "7. Student Services"; "8. Vocational Education"; "9. Developmental Education"; "10. Community Education"; "11. Collegiate Functions, Transfer and Liberal Arts"; "12. Scholarship"; "13. The Social Role"; and "14. Toward The Future, Trends, Challenges, and Obligations." Chapter 1, provides an excellent historical perspective of community colleges (including a review of colleges in other countries, pp. 24–26). In addition, information from chapters 2, "Students, Diverse Backgrounds, Purposes, and Outcomes"; 3, "Faculty"; 6, "Instruction"; 7, "Student Services"; and 9, "Development Education" all relate to student engagement.

1983, *A Nation at Risk*. A robust and spirited national discussion on the state of higher education ensued as a result of the National Commission on Excellence in Education's (1983) report *A Nation at Risk*. The report asserted that U.S. schools were in a deplorable state and putting the nation's future at risk (Levinson, 2005, p. 46). As a result of that report, over 100 national reports and 300 state reports were issued in an effort to stem the "rising tide of mediocrity" (O'Banion, 1997, p. xiii). *A Nation at Risk* definitely stirred the higher education pot.

1984, Carol D. Perkins Vocational and Applied Technology Education Act. In 1984, the Carol D. Perkins Vocational and Applied Technology Education Act was passed. This federal initiative provided operational and research support for "best practices" for vocational education. The act focused on developing learning competencies that were needed for successful technical employment. Community colleges historically have served

the nation in providing technical, vocational, and workforce education and training. Support from the Perkins Act continues to strongly assist education at community colleges.

1985, Community College Press. In 1985, the AAJCC established the Community College Press. The Community College Press publishes books, monographs, reports, and other material related to community colleges.

1985, *Renewing the American Community College*. An important book that contributed to the literature of community college is William L. Deegan and Dale Tillery's 1985 work *Renewing the American Community College*. In chapter one of part one, Deegan and Tillery provide a history of community colleges, part two provides information on teaching and learning, part three addresses assessing programs and services, and part four provides information for strengthening governance, finance, and planning. The historical periods covered in chapter one include: "Extension of High School (1900–1930)"; "Junior Colleges (1930–1950)"; "Community Colleges (1950–1970)"; and "Comprehensive Community Colleges (1970 to Mid-1980s)." Chapter three, entitled "The Changing Characteristics of Community College Students," relates to student engagement.

1987, Olympic gold. Point of interest: Bonnie Blair, who won five Olympic gold medals in speed skating (in 1988, 1992, 1994), attended Parkland College in 1987. Parkland College, in Champaign, Illinois, is one of the Illinois community colleges that is represented in this study (in addition the author of this dissertation took a course at Parkland College while attending the University of Illinois).

1988, *Building Communities; A Vision for a New Century*. In 1988, 40 years after the Truman Commission on Higher Education, a national discussion of community colleges ensued based on meetings and the publication of *Building Communities: A Vision for a New*

Century (Commission on the Future of Community Colleges, 1988). The focus of that report is the goals and the future of community colleges (David R. Pierce from the Illinois Community College Board and Wayne T. Newton from Kirkwood Community College were on the commission). The report and meetings were sponsored in part by the W. K. Kellogg Foundation and the Metropolitan Life Foundation and were facilitated by the AACC and AACJC.

As the title implies, a focus of the commission was on building communities: “The term *community* should be defined not only as a region to be served, but also as a climate to be created” (Commission on the Future of Community Colleges, 2008, p. 3). Community colleges were challenged to assume more of a leadership role in creating a renewed climate of community in geographic locations. Chapters V and VI of the report stress the importance of community college classroom and the college as community. In addition to geographic considerations, community colleges were challenged to become more of a hub for educational, social, medical, and other needs. Chapter two of the report, “Partnerships for Learning (Students and Teaching),” relates to student engagement.

1988, *Community College Times*. The first edition of *The Community College Times* (previously called the *Community, Technical, and Junior College Times*) was published in December, 1988 with a special showcase edition. The first official biweekly issue was published in January, 1989.

1989, *ASHE Reader on Community Colleges* (1994, 2006). The first edition of the respected Association for the Study of Higher Education’s *ASHE Reader on Community Colleges* was published in 1989 (Ratcliff, 1989). This edition, as well as those published earlier (Ratcliff, Schwarz, & Ebberts, 1994; Townsend, & Bragg, 2006), are useful resources

for an excellent history of community colleges (along with additional information about community colleges). James L. Ratcliff (1989), the primary editor of the first edition of the *ASHE Reader on Community Colleges*, included original historical documents related to community colleges movement. In addition, the *ASHE Reader on Community Colleges* contains great historical information provided by the President's Commission on Higher Education. The information from the Truman Commission provides an outline and framework for the expansion community colleges. Additional historical information on community colleges in context of American higher education may be found in Thelin's (2004) *A History of American Higher Education* (e.g., pp. 249–251, 299–301, 332–335).

1989, ASHE reader *The History of Higher Education* (1997, 2007). The purpose of the ASHE reader *The History of Higher Education* is clear; according to the first sentence on the first page of the preface (1st edition), “The Reader comprehensively covers the history of American higher education” (Goodchild & Wechsler, 1989, preface). In the first edition, Harold S. Wechsler wrote the preface, Lester F. Goodchild wrote the introduction, and Leslie D. Domonkos wrote the “Overview: History of Higher Education.” Following that material, the history of American education was organized into five parts: part I. “Colonial Higher Education in the Americas (1538–1789)”; part II. “Higher Education During the Antebellum Period (1790–1860)”; part III. “The Rise of American Universities and Other Postsecondary Institutions During the Nineteenth and Early Twentieth Centuries” (including Sections 4 and 5 of the 1862 Morrill Act); part IV. “Higher Education During the First Half of the Twentieth Century, Institutional Diversity and Discrimination”; and part V. “The Main Trends in Higher Education after World War II, Federalism and Democratization” (including original documents for the 1944 GI Bill of Rights, the 1947 President's Commission of Higher

Education, and the 1965 Higher Education Act). In addition, in the second edition there is a short review of community colleges and an interesting discussion of research and teaching at community colleges (Goodchild & Wechsler, 1997).

The organization of the second and third edition of this ASHE reader is similar to the first edition (Goodchild & Wechsler, 1997; Wechsler, Goodchild, & Eisenman, 2007). For the second edition of *The History of Higher Education* (Goodchild & Wechsler, 1997), Harold Perkin wrote the overview, “History of Universities” (now Part I). The organization for the histories of universities differed in the two editions; the remaining format is similar to the first edition (note a difference in the year in Part II).

The 1990s

1990–1991, enrollment. Between 1990 and 1991 enrollment at community colleges increased by 412,000 students, which was 76% of total growth in all of higher education.

1992, enrollment. In 1992, community colleges enrolled 38% of all students in higher education and 49% of all first-time freshmen.

1992, American Association of Community Colleges. In 1992, the American Association of Community and Junior Community Colleges changed its name to the American Association of Community Colleges.

1994, School-to-Work Opportunities Act. The School-to-Work Opportunities Act was passed in 1994 to create local partnerships between education, community-based organization, business, labor, and government to strengthen the connection between education and employment. To help with vocational education, many community colleges have established strong relationships with business and industry. Professionals in business and industry truly understand the needs of the workforce. Partnerships between community

colleges and business and industry have resulted in positive outcomes for students, community colleges, the workforce, and the community.

1994, *A Handbook on the Community College in America: Its History, Mission, and Management*. In 1994, George A. Baker, III edited his comprehensive book, *A Handbook on the Community College in American: Its History, Mission, and Management*. A historical context was provided in part 1. “Historical Development of the Community College” (including seven streams of historical development). Additional information about community colleges was found in parts 2. “Mission and Function”; 3. “Curriculum and Instruction”; 4. “Leadership and Management”; 5. “Resource Development”; 6. “Human Resources”; 7. “Faculty”; 8. “Student Development”; 9. “External Forces”; 10. “The Future of Community Colleges”; and a helpful bibliographic essay on community colleges (pp. 649–652). Part 8 of Baker’s book, “Student Development in the Community College,” relates to student engagement.

1994, *America’s Community Colleges: The First Century*. A historical context for the history of community colleges, *America’s Community Colleges: The First Century*, was published in 1994 by Allen A. Witt, James L. Wattenbarger, James F. Gollattscheck, and Joseph E. Suppiger. The history of community colleges was divided into 15 chapters: “1. The Evolution of an Idea”; “2. Birth of a Movement”; “3. Spreading the Gospel (1892–1919)”; “4. The Soaring Twenties (1920–1929)”; “5. Status Report (1929)”; “6. Association and Accreditation”; “7. The Great Depression (1929–1939)”; “8. The Second World War (1939–1945)”; “9. The GI Bill and Expansion”; “10. The Cold War (1949–1958)”; “11. Status Report (1959)”; “12. Serving the Total Population (1960–1969)”; “13. Master Plans and Statewide Systems (1960–1969)”; “14. The Age of Activism (1970–1979)”; and “15.

Toward a Second Century (1980–1992)”. The epilogue (pp. 273–276) has an excellent overview of community colleges.

1995, *The Community College Story* (2000, 2005). Published by the AACC, George B. Vaughan’s excellent work *The Community College Story* (Vaughan, 1995, 2000, 2005) has an overview and historical context of community colleges. This book provides an overview of community colleges, the mission, implementing the mission, students and faculty, funding and governance, a history of innovation, facing challenges ahead, milestones in community colleges, references, and resources.

The New Millennium

2001, Community College Centennial. In 2001, community colleges turned 100 years old. Community colleges became the largest sector of higher education, serving almost half of the nation’s undergraduates.

2004, Community Based Job Training Grant Program. The U.S. Department of Labor’s Job Training initiative was directed for only the nation’s community colleges. This initiative was created to help community colleges deliver high quality job training programs in high demand fields.

2005, *Community Colleges: A Reference Handbook*. In 2005, David L. Levinson (2005) added to the community college literature when he wrote his reference book on community colleges, *Community Colleges: A Reference Handbook*. This work included the following chapters: “1. An Overview and Background on Community Colleges”; “2. A History of Community Colleges in the 20th Century” (including a review of models to explain the development of community colleges, p. 51); “3. Access and Community Colleges”; “4. Transfer and Career Curriculum”; “5. Lifelong Learning at Community

Colleges”; “6. The Future of Community Colleges”; “7. Organizations, Associations, and Government Agencies”; 8. “Resources” (print, website); a bibliography for additional resources; a glossary; and an index. Levinson’s reference handbook is useful, helpful, and an easily accessible source of information about community colleges.

2006–2007, a portrait. By 2006–2007 there were 1,045 community colleges in the nation with a student population of 6.2 million. Students attending community colleges represented 35% of all students in higher education. In keeping with the principle of geographic accessibility, in 2006 the same percentage of community colleges were found in both cities (29%) and rural areas (29%), and an additional 24% of were found in towns and 18% in suburban settings. In keeping with the principle of affordability, during 2006 the average cost for tuition and fees at community colleges (\$2,017) was less than half that at 4-year colleges and universities (\$5,685), and about one 10th the cost at private 4-year colleges and universities (\$20,492; Provasnik & Planty, 2008).

2010, The Completion Agenda: A Call to Action. In the same year as the data for this research (2010), the AACC and representatives from five other national organizations that support community colleges joined together for the initiative The Completion Agenda: A Call to Action. The focus of this initiative was to increase student completion rates by 50% in the next century. Joining AACC in that effort was the CCSSE, the Association of Community College Trustees, the League for Innovation, National Institute for Staff and Organizational Development, and Phi Theta Kappa. Student completion of degrees, certificates, and other credentials is one of the most important aspects of higher education. However, although the goal for some students is graduation, the goal for other students

(especially at community colleges) is the completion of a certificate or a vocational training program, personal interest classes, or lifelong learning.

2010, AACC Brief for the White House Summit on Community Colleges. In preparation for the White House Summit on Community Colleges on October 5, 2010, the AACC (2010) prepared a *Community College Issues Brief*. Current issues in community colleges that were included in the brief are as follows.

- Community college federal legislative issues,
- Low tuition and federal student aid equal *access* and *success* (emphasis added),
- Community colleges offer the best hope to meet *workforce* and *education* goals (emphasis added),
- Community colleges accept the completion challenge,
- Community colleges respond to calls for accountability,
- A skilled workforce is key to economic recovery and future competitiveness,
- Community colleges help meet teacher shortages by redefining pathways for teacher education,
- Community colleges help foster global education and multicultural understanding,
- 2010 community college facts at a glance

2010, White House Summit on Community Colleges. On October 5, 2010, President Barack Obama hosted the first ever White House Summit on Community Colleges. Dr. Jill Biden (wife of the current Vice President Joe Biden and a community college educator) served as chair for that event. The summit brought together representatives from business, federal and state leaders, philanthropy, community colleges, and students to discuss how community colleges can help meet the job training and educational needs of the nation's

workforce. The summit highlighted the critical role community colleges play in developing America's workforce and educational goals. President Obama called for community colleges to educate an additional 5 million students with degrees, certificates, and other credentials by 2020. In addition, the president called for the nation to lead the world with the highest proportion of college graduates by 2020 (currently 16th).

2011–2012, The American Association of Community Colleges 21st Century Commission (2011), and *Reclaiming the American Dream; Community Colleges* (April 2012). In response to President Barack Obama's White House Summit on Community Colleges on October 5, 2010, the AACC 21st Century Commission was created in April 2012. The AACC published *Reclaiming the American Dream: Community College and the Nation's Future*, a report from the 21st Century Commission on the Future of Community Colleges (AACC, 2012). The Commission was supported by the AACC, the Bill & Melinda Gates Foundation, Kresge Foundation, ACT, and the Educational Testing Service. The commission was chaired by Dr. Walter G. Bumphus, president and CEO of the AACC, and there were three cochairs and 38 members on the commission.

There were two phases to the initiative: an information-gathering phase (listening tour) and the publication of *Reclaiming the American Dream*. One of the information-gathering areas included student success (a major goal of student engagement is student success). Other areas of *Reclaiming the American Dream* also addressed additional issues related to student engagement (e.g., see "Framework of Institutional Responses Needed to Move Community Colleges Ahead," AACC, 2012, p. 14).

According to an AACC news release on April 21, 2012, the premise of the Commission can be summarized in the following three sentences:

The American dream is at risk. Because a highly educated population is fundamental to economic growth and a vibrant democracy, community colleges can help reclaim that dream. But stepping up to this challenge will require dramatic redesign of these institutions, their mission, and most critical, their students' educational experience.

(AACC, 2012, p. 1)

According to the commission; higher education is in trouble, changes are needed, the nation needs an educated and trained workforce, and community colleges are vital to the needs of the nation. The news release also provided the following information: in 2010 community colleges enrolled 13.3 million students in credit and noncredit courses; for generations the United States led the world in college degree completion, although in 2010 the United States ranked 16th in the world in college completion rates for 25 to 34-year-olds. Furthermore, it is projected that, by 2018, nearly two-thirds of all American jobs will require a postsecondary certificate, or an associate's or bachelor's degree. The commission's suggested changes for the nation's community colleges that were based on the "Three Rs": redesign student's educational experiences (e.g., student engagement), reinvent institutional roles, and reset the system to create incentives for student and institutional success.

- Redesign students' educational experiences:

1. Increase completion rates of community college credentials (certificates and associate degrees) by 50% by 2020, while preserving access, enhancing quality, and eradicating attainment gaps associated with income, race/ethnicity, and gender.

2. Dramatically improve college readiness: By 2020, reduce by half the number of students entering college unprepared for rigorous college-level work and double the rate of students who complete developmental education programs and progress to successful completion of related freshman-level courses.
 3. Close the American skills gap by sharply focusing on career and technical education on preparing students with the knowledge and skills required for existing and future jobs in regional and global economies.
- Reinvest institutional roles:
 4. Refocus the community college mission and redefine institutional roles to meet 21st century education and employment needs.
 5. Invest in support structures to serve multiple community colleges through collaboration among institution and with partners in philanthropy, government, and the private sector.
 - Reset the system:
 6. Target public and private investments strategically to create new incentives for institutions of education and their students and to support community college efforts to reclaim the American Dream.
 7. Implement policies and practices that promote rigor, transparency, and accountability for results in community colleges.

Overall, it was reported by the Commission that the American Dream is associated with higher education and that there are challenges in American higher education (e.g., the United States is 16th in the world in college degree completion).

Historically, earlier national educational commissions have examined the role of community colleges. In 1947, the Truman Commission developed a national framework for higher education and the role of community colleges. In 1988, the report of the Commission on the Future of Community Colleges established an agenda to strengthen community colleges in “building communities.” There have been similarities in the language and concerns, for many years, from previous commissions.

The Future

2014, projected need. It is projected that the majority of new jobs created next year, in 2014, will require some postsecondary education (see below). With the focus on affordability and accessibility, community colleges provide postsecondary education for millions of students.

2018, projected need. It is estimated that by 2018 nearly two-thirds of all American jobs will require a postsecondary certificate, or an associate or baccalaureate degree (see below). Community colleges will continue to support the needs of vocational education.

Historical Data For Community Colleges

Community colleges are more than 110 years old and, in that time, their numbers and enrollment clearly have grown. At one time, independent community colleges numbered over 300 colleges, although currently there are more than 100 of those independent colleges. See Table 2.61 for community college enrollment numbers spanning the time period from 1900 to 2005.

Table 2.61

Historical Data for Community Colleges: Count and Enrollment

Year	Count			Enrollment
	Public/Tribal	Independent	Total	
1900	0	8	8	
1915	19	55	74	
1920	70	137	207	
1925	136	189	325	
1930	178	258	446	
1935	223	309	532	
1940	258	317	575	
1945	261	323	584	
1950	337	311	648	
1955	338	260	598	
1960	390	273	663	
1965	503	268	771	
1970	847	244	1,091	
1975	1,014	216	1,230	3,970,119
1980	1,049	182	1,231	4,526,287
1985	1,068	154	1,222	4,531,077
1990	1,282	183	1,465	5,240,083
1993				5,580,860
1994				5,561,476
1995	975	168	1,143	5,475,961
1996				5,508,223
1997				5,537,978
1998	995	137	1,132	5,553,383
1999				5,573,398
2000			1,155	5,942,371
2001				6,231,837
2002				6,562,386
2004			1,158	
2005			1,186	

Note. Adapted from *The Community College Experience* (2nd and 3rd edition), by G. B. Vaughan, 2000, 2005. There is some missing data from the original sources; in addition some of the above data differ between the 2nd and 3rd editions.

Vocational Education

As reported above, historically community colleges have strongly supported vocational education. At the international level, from 2-week educational immersion experiences in Finland and Poland, the author of this dissertation had the opportunity to observe first-hand excellent examples of successful relationships between vocational education and business and industry. For example in Finland, members of business and industry are very involved as a vital component of the planning and training of educational/vocational programs for students (who are likely future employees). Those models of vocational education have very engaged and collaborative “internship” programs. Professions from business and industry truly know and understand what is needed for employment. Due to the extensive involvement of business and industry in vocational education in Finland, the path between vocational education and employment in Finland seems relatively seamless. Compared to vocational education programs in Finland (and other countries), there appears to be a disconnect between some vocational/ career/technical programs at community colleges and future employment in the United States.

Summary

Chapter 2 provided context for the study through a review of literature. This chapter began with a synthesis of theory, research, and literature, which was followed by additional context about CCSSE and NSSE. Further context was provided by a profile of Illinois community colleges and Illinois higher education, as well as national profiles of community colleges and postsecondary education. Next, the important historical background and context for community colleges and student engagement was presented. The chapter concluded with

a historical numerical review of community colleges, a note on vocational education, and the summary.

CHAPTER 3. RESEARCH METHODOLOGY

Science is the attempt to make the chaotic diversity of our sense-experience correspond to a logically uniform system of thought.

Albert Einstein

The quote above from Albert Einstein describes science as an attempt to make a logical uniform system of thought. The research methodology in this chapter attempts to describe a scientific, logical uniform system of thought.

Overview

This chapter describes the research methodology used for this study. The chapter begins with a description of the quantitative nature of the research. That is followed by information regarding the CCSSE survey instrument; parameters of the sample, which include the exclusion of data and characteristics of participating colleges (location, organization, size, enrollment, and other information), and reasons for data selection. The next portion of the chapter provides operational definitions and information about the study's two outcome dependent variables (grade point average and total credit hours) and the three sets of predictive independent variables (student engagement CCSSE benchmarks, student engagement CCSSE individual variables from benchmarks, and student characteristics). Next is information regarding the statistical analysis system used in the study (SPSS/PASW 18), the data analysis (descriptive statistics and ordinal logistic regression), ethical considerations (the data are absolutely confidential), delimitations (time, scope, and student age), and limitations (CCSSE questions, the sample, self-reported data, and reported data). The chapter concludes with a summary.

Research Approach

This research was a quantitative study. Analysis of secondary data from the CCSSE was utilized to discover which student engagement variables and student characteristics predict student academic achievement. Quantitative data from survey research are appropriate for the type of empirical numerical data used in this research. Information regarding the survey instrument is described below.

Survey Instrument

The survey instrument used to discover which student engagement variables and student characteristics predict student academic achievement was the CCSSE. The CCSSE is a standardized national research tool that measures student engagement at community colleges across the nation. The CCSSE was patterned after the NSSE, which measures student engagement at 4-year colleges and universities. Studies of reliability and validity have been conducted on both the CCSSE and NSSE. See the literature review in chapter 2 for additional information about the CCSSE.

The standard CCSSE is composed of 38 core questions. Information from those questions serve as the foundation for the five standardized benchmarks of student engagement which include (a) active and collaborative learning, (b) academic challenge, (c) student effort, (d) student–faculty interaction, and (e) support for learning. The five conceptual student engagement benchmarks are a composite of between six and 10 individual CCSSE questions. Depending on the level of measurement, most CCSSE survey questions use Likert-type rating scales (see below for operational definitions of variables). See Appendix A for a copy of the CCSSE instrument used for this research.

The CCSSE is administered nationally in the spring term (February through April). The instrument is a paper-and-pencil survey that was designed to be completed in the classroom setting during a 50-minute class period. CCSSE (n.d.b) has reported that the participation rate for the survey is increased by administering it during class time.

Students who report their age as being under 18 years of age (e.g., dual credit or dual enrollment high school students) are excluded from the survey due to lack of parental consent for minors. In addition, only credit classes are included in CCSSE surveys. See the extensive CCSSE (n.d.a) website for additional information.

Sample

Although many colleges in the United States participated in the standardized 2010 CCSSE, the sample for this study was 19,516 randomly selected students from 13 Illinois community colleges who participated in the 2010 CCSSE. Findings from this study were based on an 80% random sample of CCSSE data from the 2010 participating Illinois community colleges. According to Jeff F. Crumpley (personal communication, June 16, 2011), Associate Director of Operations at the CCCSE, the organization does not normally release 100% of a CCSSE dataset.

Class sections chosen for administration of the CCSSE are randomly selected from an electronic data file listing all credit courses. Sample stratification is based on the time of day that class begins (i.e., morning, afternoon, or evening). That sampling procedure ensures that the number of courses selected in each time period is proportional (McClenney, 2006).

In addition, according to the CCSSE (n.d.a) website, the required number of course selections is determined by the total sample size needed to reduce sampling error and ensure valid results. For CCSSE surveys, sample sizes range from approximately 600 students to

approximately 1,200 students, depending on institution size. For colleges with fewer than 1,500 students, the targeted sample size is about 20% of total credit enrollment. The CCCSE provides extensive information regarding their sampling procedures and other areas of research methodology on their website (CCCSE, n.d.a).

Exclusion of Data

The following students are excluded from CCSSE data:

- Respondents not indicating whether he or she was enrolled full time or less than full time at the institution.
- Respondents not answering any of the 21 sub-items in item 4, answering “very often” to all 21 sub-items, or answering “never” to all 21 sub-items.
- Respondents reporting his or her age as under 18.
- Respondents indicating that he or she had taken the survey in a previous class or not responding to item 3 (oversampled respondents are not included because they are selected outside of CCSSE’s primary sampling procedures).

Characteristics of Participating Colleges

This section provides information about the Illinois community colleges that participated in the 2010 CCSSE. CCSSE collects institutional information about a community college’s location, organization, size, and enrollment (CCSSE, 2012).

Location

The CCCSE categorizes the location of community colleges into the three groups: rural-serving, suburban-serving, and urban-serving. All three types of locations of community colleges were represented in this research. Of the 13 Illinois community colleges

included in this study, six were rural-serving colleges, six were suburban-serving colleges, and one was an urban college (Table 3.1).

Organization

CCSSE categorizes community colleges according to three types of organization: single campus, multicampus, and a college in a multicollge system. All three types of organization were represented in this study (Table 3.2): six single campuses, six multicampuses, and one college in a multicollge system (Chicago).

Size

CCSSE also categorizes community colleges into groups according to student enrollment: small = 0–4,499 students, medium = 4,500–7,999 students, large = 8,000–14,999

Table 3.1

Participating Colleges by CCSSE Location

CCSSE location classification	<i>n</i>
Rural-serving colleges	6
Urban-serving colleges	6
Suburban-serving colleges	1
Total	13

Table 3.2

Participating Colleges by CCSSE Organization

CCSSE organization	<i>n</i>
Single campus	6
Multicampus	6
Multicollge	1
Total	13

Table 3.3

Participating Colleges by CCSSE Size

CCSSE size categories	<i>n</i>
Small colleges (0–4,499)	1
Medium colleges (4,500–7,999)	5
Larger colleges (8,000–14,999)	5
Extra-large colleges (15,000+)	2
Total	13

students, and extra-large = 15,000 or more students. All sizes of community colleges were represented in this study: one small college, five medium colleges, five large colleges, and two extra-large colleges (Table 3.3).

Enrollment

CCSSE obtains the student enrollment counts for community colleges from the IPEDS data. The 2008 IPEDS data provided the basis for the 2010 CCSSE enrollment counts. Student enrollment counts for community colleges in this study ranged from 2,124 students to 16,359 students. This study included student enrollment counts of 2,124, 5,066, 5,368, 5,374, 7,107, 8,072, 9,273, 9,307, 9,711, 12,020, 14,088, 14,308, and 16,359 (Table 3.4).

Additional Characteristics

Information about the 13 Illinois community colleges participating in this study, including each college's name, city, CCSSE location category, organization, size, and 2010 enrollment, is shown in Table 3.4.

Table 3.4

Summary Table of Participating Illinois Community Colleges

College name	CCSSE category				
	City	Location	Organization	Size	Enrollment
College of Lake County	Grayslake	Suburban-serving	Single campus	Extra-large	16,359
Illinois Central College	East Peoria	Rural-serving	Multicampus college	Large	12,020
Joliet Junior College	Joliet	Suburban-serving	Multicampus college	Extra-large	14,088
Kaskaskia College	Centralia	Rural-serving	Single campus	Medium	5,066
Lake Land College	Mattoon	Rural-serving	Multicampus college	Medium	7,107
McHenry County College	Crystal Lake	Suburban-serving	Single campus	Medium	5,374
Parkland College	Champaign	Rural-serving	Single campus	Large	9,273
Prairie State College	Chicago Heights	Suburban-serving	Single campus	Medium	5,368
Richard J. Daley College	Chicago	Urban-serving	College in a multicampus system	Large	9,711
Rock Valley College	Rockford	Rural-serving	Single campus	Medium	8,072
Southwestern Illinois College	Belleville	Suburban-serving	Multicampus college	Large	14,308
Spoon River College	Canton	Rural-serving	Multicampus college	Small	2,124
Waubonsee Community College	Sugar Grove	Suburban-serving	Multicampus college	Large	9,307

Data Selection

There were several reasons for the choice of studying student engagement at Illinois community colleges. First, the author of this dissertation works at an Illinois community college, John Wood Community College (JWCC) in Quincy, Illinois. As chair of the Department of Social/Behavioral Sciences and assistant professor, the author was involved in CCSSE data collection at JWCC during 2008, 2009, and 2012. Second, the purpose of the researcher's sabbatical during fall 2012 was to study student engagement at an Illinois community college (JWCC). Third, the Illinois community college system is the third largest in the country. Illinois boasts of the first "community college" in the nation, Joliet Junior College. The Illinois community college system continues to play a significant educational role at the state level (e.g., enrolling more than 60% of college students in 2010) and at the national level.

The fourth reason the author chose to study student engagement is because his first college experience was at an Illinois community college (Prairie State Community College). Fifth, the author also was an adjunct professor at four community colleges: Sinte Gleska Tribal College, Rosebud Sioux Indian Reservation, Mission, South Dakota; McCook Community College, McCook, Nebraska; Mid-Plains Community College, North Platte, Nebraska; as well as at John Wood Community College, Quincy, Illinois. In addition, during extended educational immersion trips (2 weeks each) the author was able to study and examine the educational systems in Finland, Poland, El Salvador, Guatemala, and Colombia. Sixth, at the author's original dissertation proposal meeting at Iowa State University, members of his Program of Study Committee suggested that student engagement research be expanded to Illinois community colleges. In addition, the author's co-dissertation chair, Dr.

Larry H. Ebberts, was on a board of CCSSE, and the other co-dissertation chair; Dr. Frankie Santos Laanan, also is very familiar with CCSSE (and NSSE). Finally, by choosing to utilize the national standardized CCSSE at Illinois community colleges, some of the findings may be applicable and generalizable to other settings.

Variables

This part of the chapter provides information about the variables in the study. Information is presented in sections for outcome dependent variables, predictive student engagement variables (CCSSE benchmarks and individual variables from those benchmarks), and predictive student characteristics.

Independent variables (also referred to as predictors, factors, determinants, or antecedent variables) influence, act on, predict, or affect dependent variables. Dependent variables (also referred to as outcomes, effects, or consequence variables) depend on, are influenced by, or are affected by independent variables (Creswell, 2009, 2012). A dependent variable can be viewed as the “results,” outcome, or “consequences” of an independent variable. At times, a dependent variable can be viewed as the *raison d’être*.

In order to determine which student engagement variables and student characteristics predict student academic achievement, this study examined three sets of independent variables and two outcome dependent variables. The three sets of independent variables used to predict student academic achievement were student engagement CCSSE benchmarks, student engagement CCSSE individual variables from those benchmarks, and student characteristics. Student engagement was measured by the five standardized student engagement CCSSE benchmarks and the 38 CCSSE individual variables from those benchmarks. Student characteristics included demographic and other variables that may

predict measures of student academic achievement. The two outcome dependent variables used to measure student academic achievement were the commonly used and accepted measures of student grade point average and total credit hours.

For the sake of consistency, replication, and because of the wide utilization of CCSSE as a uniform and large national measurement instrument, an effort was made to maintain as much as possible the CCSSE dataset in its original form (i.e., as little recoding as possible).

Outcome Dependent Variables

For this study, the two dependent variables of grade point average and total credit hours were used as proxy measures of student academic achievement. An assumption was made that higher grade point averages and more total credit hours are valid measures of student academic achievement. Continued low grade point averages and insufficient total credit hours may result in the antithesis of student academic achievement: student departure.

Jeff Crumpley (personal communication, June 16, 2011), Associate Director of Operations at the Center for Community College Student Engagement, University of Texas at Austin, indicated that both grade point average and total credit hours are commonly used and accepted dependent variables for outcome measures of student success (and are used as outcome measures with CCSSE data). Mr. Crumpley reported that the literature behind CCSSE variables and the experience of the CCCSE support the use of these two dependent variables for student success.

Grade point average. Grade point average was one of the two dependent variables in this study. For this study, grade point average (GPA2) was recoded, reflecting common practice in data analysis. The original CCSSE grade point average variable (GPA) provided numerical values for students who did not have a grade point average (1 = Pass/fail classes

only) and for students who took only pass/fail classes (2 = Do not have a GPA at this school). The original CCSSE GPA variable was coded as 1 = Pass/fail classes only, 2 = Do not have a GPA at this school, 3 = C– or lower, 4 = C, 5 = B– to C+, 6 = B, 7 = A– to B+, and 8 = A. In this study the GPA2 variable was recoded as 1 = C– or lower, 2 = C, 3 = B– to C+, 4 = B, 5 = A– to B+, and 6 = A (Table 3.5). The grade point average data used for this study were based on students’ self-reports (see limitations later in this chapter for additional information); community colleges did not independently provided information on grade point average.

Table 3.5

Grade Point Average Recoded (GPA2)

Grade point average	Recoded value
C– or lower	1
C	2
B– to C+	3
B	4
A– to B+	5
A	6

Note. Grade point average (GPA2): At this college, in what range is your overall college grade average?: 1 = C– or lower, 2 = C, 3 = B– to C+, 4 = B, 5 = A– to B+, 6 = A (recoded, original CCSSE question 21).

Total credit hours. Total credit hours was the second outcome dependent variable in this study. This variable also is a commonly used proxy measure of student academic achievement. The survey simply asks students to record the total credit hours they have earned at “this” college (not including the current term; see Table 3.6).

Table 3.6

Total Credit Hours

Number of credit hours	Value
None	0
1–14	1
15–29	2
30–44	3
45–60	4
Over 60	5

Note. Total credit hours (TOTCHRS): How many TOTAL credit hours have you earned at this college, not counting the courses you are currently taking this term?: 0 = None; 1 = 1–14 credits; 2 = 15–29 credits; 3 = 30–44 credits; 4 = 45–60 credits; 5 = over 60 credits (CCSSE question 23).

Predictive Independent Variables

There were three sets of independent variables in this study: (a) student engagement CCSSE benchmarks, (b) student engagement CCSSE individual variables from those benchmarks, and (c) student characteristics.

Student engagement CCSSE benchmarks. For purposes of this research, student engagement was measured by both the five standardized composite student engagement CCSSE benchmarks and student engagement CCSSE individual variables from those benchmarks. The five student engagement CCSSE benchmarks were measured by a composite score based on student engagement CCSSE individual variables. The five student engagement CCSSE benchmarks used in this study are as follows:

1. Active and collaborative learning (actcoll_std)
2. Student effort (stueff_std)
3. Academic challenge (acchall_std)

4. Student–faculty interaction (stufac_std)
5. Support for learning (support_std)

Student engagement CCSSE individual variables from benchmarks. Both student engagement CCSSE benchmarks and student engagement CCSSE individual variables from those benchmarks measure student engagement. The benchmarks are composed of the individual variables from those benchmarks. There were 38 student engagement CCSSE individual variables from the five benchmarks. The numbers of individual variables per benchmark are as follows:

1. Benchmark one: active and collaborative learning (7 individual variables);
2. Benchmark two: student effort (8 individual variables);
3. Benchmark three: academic challenge (10 individual variables);
4. Benchmark four: student–faculty interaction (6 individual variables);
5. Benchmark five: support for learning (7 individual variables).

The operational definitions for the 38 student engagement CCSSE individual variables, which are the foundation for the five benchmarks, are specified below.

Benchmark one, active and collaborative learning (actcoll_std). CCSSE benchmark one, active and collaborative learning, is based on the following seven CCSSE individual variables:

- Ask questions in class (CLQUEST): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Asked questions in class or contributed to class discussion: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4a).

- Make class presentation (CLPRESEN): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Made a class presentation: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4b).
- Others in class (CLASSGRP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following?
Worked with other students on projects during class: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4f).
- Others out of class (OCCGRP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked with classmates outside of class to prepare assignments: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4g).
- Tutored/taught others (TUTOR): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Tutored or taught other students (paid or voluntary): 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4h).
- Community project (COMMPROJ): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Participated in a community-based project as part of a regular course: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4i).
- Discuss out of class (OOCIDEAS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed ideas from your reading or classes with others outside of class

(students, family members, co-workers, etc.): 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4r).

Benchmark two, student effort (stueff_std). CCSSE benchmark two, student effort, is based on the following eight CCSSE individual variables:

- Two or more 2 drafts (REWROPAP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Prepared two or more drafts or a paper of assignment before turning it in: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4c).
- Integrate sources (INTEGRAT): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked on a paper or project that required integrating ideas or information from various sources: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4d).
- Unprepared (CLUNPREP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Come to class without complete reading or assignments: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4e).
- Read books (READOWN): During the current school year, about how much reading and writing have you done at this college? Number of books read on your own (not assigned) for personal enjoyment or academic enrichment: 1 = None, 2 = Between 1 and 4, 3 = Between 5 and 10, 4 = Between 11 and 20, 5 = More than 20 (CCSSE question 6b).

- Time preparing for class (ACADPRO1): Hours spend per week: About how many hours do you spend in a typical 7-day week doing each of the follow? Preparing for class (studying, reading, writing, rehearsing, doing homework, or other activities related to your program): 0 = None, 1 = 1–5 hours, 2 = 6–10 hours, 3 = 11–20 hours, 4 = 21–30 hours, 5 = More than 30 hours (CCSSE question 10a).
- Use tutor (USETUTOR): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Peer or other tutoring: 0 = Do not know/not applicable, 1 = Rarely/never, 2 = Sometimes, 3 = Often (CCSSE question 13d1).
- Lab: writing, math (USELAB): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Skill labs (writing, math, etc.): 0 = Do not know/not applicable, 1 = Rarely/never, 2 = Sometimes, 3 = Often (CCSSE question 13e1).
- Lab: computer (USECOMLB): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Computer lab: 0 = Do not know/not applicable, 1 = Rarely/never, 2 = Sometimes, 3 = Often (CCSSE question 13h1).

Benchmark three, academic challenge (acchall_std). CCSSE benchmark three, academic challenge, is based on the following 10 CCSSE individual variables:

- Work hard (WORKHARD): Frequency: In your experience at this college during the current school year, about how often have you done each of the following?
Worked harder than you thought you could to meet an instructor's standards or expectations: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4p).

- Analysis (ANALYSE): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Analyzing the basic elements of an idea, experience, or theory: 1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much (CCSSE question 5b).
- Synthesis (SYNTHESZ): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Synthesis and organizing ideas, information, or experience in new ways analyzing the basic elements of an idea, experience, or theory: 1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much (CCSSE question 5c).
- Discernment (EVALUATE): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Making judgments about the value or soundness of information, arguments, or methods: 1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much (CCSSE question 5d).
- Application (APPLYING): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Applying theories or concepts to practical problems or in new situations: 1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much (CCSSE question 5e)
- Perform new skill (PERFORM): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized

the following mental activities? Using information you have read or heard to perform a new skill: 1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much (CCSSE question 5f)

- Read texts (READASGN): During the current school year, about how much reading and writing have you done at this college? Number of assigned textbooks, manuals, books, or book-length packs of course readings: 1 = None, 2 = Between 1 and 4, 3 = Between 5 and 10, 4 = Between 11 and 20, 5 = More than 20 (CCSSE question 6a).
- Written papers (WRITEANY): During the current school year, about how much reading and writing have you done at this college? Number of written papers or reports of any length: 1 = None, 2 = Between 1 and 4, 3 = Between 5 and 10, 4 = Between 11 and 20, 5 = More than 20 (CCSSE question 6c).
- Exams (EXAMS): Mark the box that best represents the extent to which your examinations during the current school year have challenged you to do your best work at this college: 1 = Extremely easy, 2 = 2, 3 = 3, 4 = 4, 5 = 5, 6 = 6, 7 = Extremely challenging (CCSSE question 7).
- College encourages studying (ENVSCHOL): Amount of emphasis by college: To what extent does this college emphasize each of the following? Encouraging you to spend significant amounts of time studying: 1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much (CCSSE question 9a).

Benchmark four, student–faculty interaction (stufac_std). CCSSE benchmark four, student–faculty interaction, is based on the following six CCSSE individual variables:

- Email to faculty (EMAIL): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Used e-

mail to communicate with an instructor: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4k).

- Talk grades/work with faculty (FACGRADE): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed grades or assignments with an instructor: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4l).
- Talk career plans (FACPLANS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Talked about career plans with an instructor or advisor: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4m).
- Talk class ideas to faculty outside of class (FACIDEAS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed ideas from your reading or classes with instructors outside of class: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4n).
- Prompt faculty feedback (FACFEED): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Received prompt feedback (written or oral) from instructors on your performance: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4o).
- Faculty non-class (FACOTH): Frequency: In your experience at this college during the current school year, about how often have you done each of the following?

Worked with instructors on activities other than coursework: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often (CCSSE question 4q).

Benchmark five: support for learning (support_std). CCSSE benchmark five, support for learning is based on the following seven CCSSE individual variables:

- College support (ENVSUPRT): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the support you need to help you succeed at this college: 1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much (CCSSE question 9b).
- College encourages diversity (ENVDIVRS): Amount of emphasis by college: To what extent does this college emphasize each of the following? Encouraging contact among students from different economic, social, and racial or ethnic backgrounds: 1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much (CCSSE question 9c).
- College help non-academics (ENVNACAD): Amount of emphasis by college: To what extent does this college emphasize each of the following? Helping you cope with your non-academic responsibilities (work, family, etc.): 1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much (CCSSE question 9d)
- Social support (ENVSOCAL): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the support you need to thrive socially: 1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much (CCSSE question 9e)
- Financial support (FINSUPP): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the financial support you

need to afford your education: 1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much (CCSSE question 9f)

- Academic advising (USEACAD): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Academic advising/planning: 0 = Do not know/not applicable, 1 = Rarely/never, 2 = Sometimes, 3 = Often (CCSSE question 13a1)
- Career counseling (USECACOU): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Career counseling: 0 = Do not know/not applicable, 1 = Rarely/never, 2 = Sometimes, 3 = Often (CCSSE question 13b1)

Student characteristics. A great deal of research has examined the relationship between various student characteristics and student success (Kuh et al., 2006, Pascarella & Terenzini, 1991, 2005). The creation of the CCSSE utilized the expertise and experience of NSSE and a technical panel of experts. In addition, CCSSE has conducted extensive research and has an excellent annotated bibliography that provides research literature that supports the student characteristics (and other variables) used in their survey.

Based on the literature and expert advice, the following student characteristics were examined to determine if they predict student academic achievement: gender, age, race/ethnicity, enrollment, married status, children, dependents, work for pay, public assistance, orientation program, English, and international students. The operational definitions and descriptions of the student characteristics are as follows:.

- Gender (SEX): Your gender: 1 = Male, 2 = Female (CCSSE question 30).

- Age (AGENEW): Mark your age group: 1 = 18–19, 2 = 20–21, 3 = 22–24, 4 = 25–29, 5 = 30–39, 6 = 40–49, 7 = 50–64, 8 = 65+ (recoded, original CCSSE question 29)
- Race/ethnicity (RERACE): What is your racial identification? (Mark all that apply):
1 = American Indian or other Native American, 2 = Asian, Asian American or Pacific Islander, 3 = Native Hawaiian, 4 = Black or African American, 5 = White, Non-Hispanic, 6 = Hispanic, Latino, Spanish, 7 = Other (CCSSE question 34).
- Enrollment (part time) (ENRLMENT): Thinking about this current academic term, how would you characterize your enrollment at this college?: 1 = Less than full time, 2 = full time (CCSSE question 2). The CCSSE weighted variable of Enrollment (part time) (iweight) was used to measure enrollment for ordinal logistic regression.
- Married (MARRY): Are you married?: 1 = Yes, 2 = No (CCSSE question 31).
- Children (HAVKID): Do you have children who live with you?: 1 = Yes, 2 = No (CCSSE question 28).
- Dependents (CAREDE01): About how many hours do you spend in a typical 7-day week doing each of the following? Providing care for dependents living with you (parents, children, spouse, etc.): 0 = None, 1 = 1–5 hours, 2 = 6–10 hours, 3 = 11–20 hours, 4 = 21–30 hours, 5 = More than 30 hours (CCSSE question 10d).
- Work for Pay (PAYWORK): About how many hours do you spend in a typical 7-day week doing each of the following? Working for pay: 0 = None, 1 = 1–5 hours, 2 = 6–10 hours, 3 = 11–20 hours, 4 = 21–30 hours, 5 = More than 30 hours (CCSSE question 10b).

- Public Assistance (PUBASSIT): Indicate which of the following are sources you use to pay your tuition at this college? (*Please respond to each item*): Public assistance: 1 = Not a source, 2 = Minor source, 3 = Major source (CCSSE question 18f).
- Orientation (ORIEN): Which of the following have you done, are you doing, or do you plan to do while attending this college: h. College orientation program or course: 1 = I Have Not Done, Nor Plan To Do, 2 = I Plan To Do, 3 = I Have Done (CCSSE question 8h).
- English (ENGFIRST): Is English your first native (first) language?: 1 = Yes, 2 = No (CCSSE question 32).
- International students (INTERNAT): Are you an international student or foreign national?: 1 = Yes, 2 = No (CCSSE question 33).

Data Analysis

Descriptive and inferential statistics were used to analyze the data in this research. Descriptive statistics (frequencies and percentages) were initially used to summarize and provide a fuller description of the data. The author of this dissertation used the student version of SPSS (PASW) 18 on his computer to analyze data (along with analysis on other versions of SPSS). This section provides details regarding the methods of statistical analysis used to examine the data used in this study.

Based on education, the literature, and consultation, ordinal logistic regression was chosen to further analyze the data in this study. More specifically, SPSS (PASW) 18 ordinal logistic regression, or PLUM (Polytomous Universal Model), is an extension of the general linear model for ordinal data (Norusis, 2010, p. 69). From SPSS 18, the following path was

used to analyze the data in this study: Analyze > Regression > Ordinal; Link > Logit (evenly distributed categories). Other link functions available for ordinal logistic regression include probit, complementary log-log, negative log-log, and Cauchit (inverse Cauchy). For more information on ordinal logistic regressions, see chapter 4, “Ordinal Regression,” in *PASW Statistics 18 Advanced Statistical Procedures Companion* by Marija J. Norušis (2010) and George and Mallery’s (2011) book for SPSS 18 was helpful.

Many variables of interest are ordinal (e.g., grade point average; Norušis, 2010). Ordinal logistic regression models focus on ordinal outcome dependent variables (Jaccard, 2001, p. 47). The majority of the data from CCSSE in this study were ordinal (including the outcome dependent variables). The primary reason ordinal logistic regression was chosen for this research is because the outcome dependent variables were ordinal (ordered or ranked) (i.e., categories of grade point averages of A to F, and categories of total credit hours). Ordinal rankings do not provide equal increments between categories (e.g., grades of A, B, C, D, and F).

Overall, ordinal logistic regression provides information about how predictive independent variables (e.g., student engagement variables and student characteristics) are of an ordinal outcome dependent variable (e.g., grade point averages and total credit hours). The ordinal logistic regression procedure is based on the probability of an outcome (odds ratio; i.e., the model is predictive). The model compares observed and expected values. See the section on research findings from ordinal logistic regression for additional information.

More traditional forms of logistic regression were not used in this study because those procedures often examine a dichotomous or binary (only two categories or values) outcome dependent variable (not categorical variables). Logistic regression is an extension of

multiple regression. Logistic regression often is used to predict membership in one of two groups, such as survivors or nonsurvivors. Similarly, multiple regression was not used in this study because the outcome dependent variables were ordinal (not continuous). Multiple regression is an extension of Pearson's correlation test and simple linear regression (and was first used by Karl Pearson in 1908).

An interesting historical illustration of applied regression analysis is when Abraham Wald (of the Wald statistic; 1902–1950) worked on war concerns during World War II. During the war, Wald studied the pattern of enemy bullet holes in planes that returned from combat. He plotted the location of bullet holes and suggested putting armor in the few spots with no bullet holes because he reasoned that was where bullets hit the planes that did not return. Wald's research predicted which factors (bullets) resulted in the binary outcome of airplanes returning or not. See research findings from ordinal logistic regression for additional information.

Ethical Considerations

The data in this research are confidential. There is no personal or individual student identifying information in this study or in the CCSSE data. It would be impossible for anyone to identify an individual student in this study or dataset. In addition, in accordance with Texas state law and The University of Texas at Austin's policies, the CCCSE does not provide student-identifier data in the institution's raw data file available for download via the CCSSE online reporting system. Therefore, the confidentiality, anonymity, and privacy of students is guaranteed.

The anonymity of student information was further confirmed and explained by Dr. Kerry Agnitsch, co-chair of the Institutional Review Board (IRB), Office for Responsible

Research, at Iowa State University in an e-mail she sent to the author of this dissertation when she indicated that the study did not need IRB approval (see Appendix B).

Delimitations

Delimitations narrow a study. There were three main delimitations in this study. This study was delimited in regard to time, scope, and student age.

1. The time frame for this study was delimited to data from the 2010 CCSSE.
2. The scope of this study was delimited to Illinois community colleges that participated in the 2010 CCSSE. Therefore, not all Illinois community colleges were represented in this research. Research findings were based on an 80% random sample (by CCSSE) of CCSSE data.
3. This study was delimited to students who were age 18 years of age or older.

CCSSE does not analyze data on students who are under age 18 (see exclusion of data earlier in this chapter for additional information).

Limitations

Limitations of a study identify possible weakness and flaws in a study (i.e., areas that limit the study). Four limitations in this study include CCSSE questions, limitations in generalizability, student self-reported data, and reported data, as described below.

The data used in this study were limited to the questions asked on the CCSSE survey. The standard, or core, CCSSE asks a series of 38 predetermined questions. As a result, data were limited to those established questions on the survey. The findings from the standard CCSSE are quantitative, not qualitative.

The findings from this study can be generalized only to the 13 Illinois community colleges that participated in the 2010 CCSSE. Caution is necessary when generalizing

findings to community colleges that differ in regards to size (small, medium, larger, extra-large), location (rural-serving, suburban-serving, and urban-serving), or organization (single campus, multicampus, college in a multicollge system), and other differences.

In addition, the Illinois community colleges in this research “volunteered” to participate in the CCSSE. Therefore, the research findings may reflect a type of “volunteer bias or selection effect.” For example, it is possible that progressive and well-performing Illinois community colleges, which already encourage and support student engagement, purposely volunteered to participate in the CCSSE. In contrast, perhaps underachieving Illinois community colleges, which may be less proactive in student engagement, purposely chose not to engage in the CCSSE.

Another possible limitation of this study is that CCSSE data are based primarily on information self-reported by students. Data based on student self-reports may raise questions of the accuracy, honesty, trustworthiness, veracity, reliability, and validity of the data. Self-reported student responses may not represent the student’s true actions, practices, or attitudes. For example the grade point average used by CCSSE is based on the student’s self-report rather than any type of institutional data (CCSSE question 21). Likewise, students may have inadvertently or purposely underreported the number of classes they skipped (CCSSE question 4u). There is extensive literature regarding the utility of self-reported data (see Kuh, 2001; Kuh et al., 2006; Pace, 1984; Pascarella & Terenzini, 1991, 2005). In addition, McCormick and McClenney (2012) and Kuh (2001) concluded that overall, in aggregate, data from student self-reports for CCSSE and NSSE can be viewed as accurate information.

The last limitation of this study was that there might have been differences in reported data (primarily in the literature review section) due to different reporting sources and statistical rounding methods. National data on higher education were obtained primarily from both the NCES and the AACC. Data on higher education from Illinois were reported primarily from both the Illinois Board of Higher Education and the Illinois Community College Board.

Summary

This chapter provided information regarding the research methodology used to discover which student engagement variables and student characteristics predict student academic achievement. The chapter began with a description of the quantitative nature of the research. That information was followed by information regarding the CCSSE survey instrument, the sample, characteristics of participating colleges, data selection, dependent and independent variables, the use of SPSS/PASW 18, data analysis, ethical considerations, delimitations, limitations, and the summary. The next chapter examines research findings from the study.

CHAPTER 4. RESEARCH FINDINGS

Better to attempt to light one small candle than to curse the darkness
Confucius

Based on the statement above, Confucius advocated for light rather than darkness. It follows that the light of knowledge is superior to the darkness of ignorance. Research can discover the light of knowledge. The research findings below attempted to light one small candle.

Overview

After a description of the research methodology for the study this chapter presents the research findings. First, information is presented that provides the parameters of the study. That is followed by the research findings from the descriptive statistics to present an overview and fuller description of the data. Next, general information regarding the research findings from ordinal logistic regression is presented. Research questions 1 through 3 address the research findings for grade point average and research questions 4 through 6 address the research findings for total credit hours.

Parameters of the Research

The sample for this study consisted of 19,516 students (from randomly selected classes) from 13 Illinois community colleges. The original CCSSE dataset contained 170 variables. In order to examine the information that addressed the research questions in this study, the final dataset contained 179 variables arranged in 19,516 rows and 179 columns of data.

From the 13 Illinois community colleges in the study, the following CCSSE categories were included: location (rural-serving colleges, suburban-serving colleges, urban-

serving colleges), organization (single campus, multicampus, multicollege), size (small, medium, large, extra-large), and student enrollment (2,124 students to 16,359 students).

Research Findings from Descriptive Statistics

This section presents research findings from descriptive statistics. Frequencies (n) and percentages are provided. Information about student characteristics and dependent variables is presented at the beginning of the section to provide additional information, detail, clarity, and richness to the data and to provide further context for inferential statistical analyses. As reported earlier, for the sake of continuity and possible replication, as many of the CCSSE variables as possible remained in their original form (i.e., few variables were recoded). Discussion of research findings may be found in chapter 5.

Student Characteristics

Gender. There clearly were more female students than male students represented in this research: 59.2% of the students were female and 40.8% were male (Table 4.1).

Age. Not surprising, most students in this study were young. In fact, 23.4% of the students were age 18 or 19 years old and about the same percentage (21.3%) were age 20 to 21 years old, meaning almost half (44.7%) of the students were age 18–21 (Table 4.2). The next three age groups had similar percentages of students: 22–24 years of age, 14.4%; 25–29 years of age, 14.1%; and 30–39 years of age, 14.3%. Students age 40–49 comprised 7.7% of the sample, half that of the next younger group, and those age 50–64 comprised 4.3% of the sample, again approximately half of the next younger group. Finally, out of over 19,000 students in this study, only 101 students (0.5%) were age 65 or older.

Table 4.1

Gender of Study Participants

Gender (code)	<i>n</i>	%
Female (2)	11,378	59.2
Male (1)	7,835	40.8
Total	19,213	100.0

Note. Gender (SEX): Your gender: 1 = Male; 2 = Female (CCSSE question 30); 303 missing cases.

Table 4.2

Age of Study Participants

Age (code)	<i>n</i>	%
18–19 (1)	4,472	23.4
20–21 (2)	4,068	21.3
22–24 (3)	2,748	14.4
25–29 (4)	2,704	14.1
30–39 (5)	2,726	14.3
40–49 (6)	1,477	7.7
50–64 (7)	817	4.3
65+ (8)	101	0.5
Total	19,114	100.0

Note. Age (AGENEW): Mark your age group: 1 = 18–19, 2 = 20–21, 3 = 22–24, 4 = 25–29, 5 = 30–39, 6 = 40–49, 7 = 50–64, 8 = 65+ (recoded, original CCSSE question 29); 402 missing cases.

Race/ethnicity. The majority of students in this study were White (Table 4.3). More specifically, 61.5% of students identified themselves as White, non-Hispanic. There were similar percentages of those who reported identifying as Hispanic, Latino, Spanish (15.1%) and Black or African American (13.5%), and 5.3% of students identified themselves as Asian, Asian American, or Pacific Islander. There were very few American Indian or Native

American students ($n = 149$, 0.8%) in the study sample and even fewer Native Hawaiian students ($n = 21$ students, 0.1%); 3.7% of students were classified as “Other.”

Because there were very few students who identified themselves as American Indian/other Native American or Native Hawaiian, findings in those categories are not reported in further statistical analyses. Likewise, because of low frequencies and the lack of useful information, the category of “Other” also is not reported in further statistical analyses.

Table 4.3

Race/Ethnicity of Study Participants

Race/ethnicity (code)	<i>n</i>	%
White (5)	11,725	61.5
Hispanic (6)	2,883	15.1
Black (4)	2,574	13.5
Asian (2)	1,004	5.3
American Indian (1)	149	0.8
Hawaiian (3)	21	0.1
Other (7)	709	3.7
Total	19,066	100.0

Note. Race/Ethnicity (RERACE): What is your racial identification? (Mark all that apply): 1 = American Indian or other Native American; 2 = Asian, Asian American or Pacific Islander; 3 = Native Hawaiian; 4 = Black or African American; 5 = White, Non-Hispanic; 6 = Hispanic, Latino, Spanish; 7 = Other (CCSSE question 34); 450 missing cases.

Enrollment (full time versus part time). Most students in this research were enrolled part time: 63% of students reported part-time enrollment, and 37% of students reported full-time enrollment (Table 4.4).

Married. Most students in this research were not married: 77.9% were not married, leaving 22.1% who were married (Table 4.5).

Table 4.4

Enrollment (Full Time and Part Time) of Study Participants

Enrollment (code)	<i>n</i>	%
Less than full time (1)	12,293	63.0
Full time (2)	7,223	37.0
Total	19,516	100.0

Note. Enrollment (part time) (ENRLMENT): Thinking about this current academic term, how would you characterize your enrollment at this college?: 1 = Less than full time; 2 = full time (CCSSE question 2). The CCSSE weighted variable of Enrollment (part time) (iweight) was used to measure enrollment for ordinal logistic regression. 0 missing cases.

Table 4.5

Marriage Status of Study Participants

Married (code)	<i>n</i>	%
No (2)	14,971	77.9
Yes (1)	4,237	22.1
Total	19,208	100.0

Note. Married (MARRY): Are you married?: 1 = Yes; 2 = No (CCSSE question 31); 308 missing cases.

Children. Most students in this study did not have children who lived with them.

The data revealed that 68.8% of students did not have children who lived with them and 31.2% of students did have children who lived with them (Table 4.6).

Care for dependents. Overall, the greatest percentage (42.2%) of students spent little or no time caring for dependents who were living with them (Table 4.7). However, of the students who did care for dependents, 22.4% provided more than 30 hours a week of care for those dependents. These research results represented a type of bimodal distribution. Between those extremes, 16.7% of students reported spending 1–5 hours a week providing such care, about half that percentage (8.4%) provided 6–10 hours of care a week for

Table 4.6

Children of Study Participants

Children (code)	<i>n</i>	%
No (2)	13,223	68.8
Yes (1)	5,983	31.2
Total	19,206	100.0

Note. Children (HAVKID): Do you have children who live with you?: 1 = Yes; 2 = No (CCSSE question 28); 311 missing cases.

Table 4.7

Number of Hours Study Participants Spent per Week Caring for Dependents

Hours per week (code)	<i>n</i>	%
None (0)	8,087	42.2
1–5 (1)	3,200	16.7
6–10 (2)	1,618	8.4
11–20 (3)	1,152	6.0
21–30 (4)	796	4.2
More than 30 (5)	4,299	22.4
Total	19,153	100.0

Note. Dependents (CAREDE01): About how many hours do you spend in a typical 7-day week doing each of the following? Providing care for dependents living with you (parents, children, spouse, etc.): 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30 hours; 5 = More than 30 hours (CCSSE question 10d); 364 missing cases.

dependents, 6.0% provided 11–20 hours of care a week, and 4.2% provided 21–30 hours of care.

Work for pay. Most students in this study worked for pay (Table 4.8). Many worked a considerable number of hours per week: 36.2% worked more than 30 hours a week.

Another 17.3% of students worked 21–30 hours per week, meaning that 53.5% of students worked 21 or more hours per week. Of the remaining students, 13.8% worked 11–20 hours a

Table 4.8

Number of Hours Study Participants Worked for Pay per Week

Hours per week (code)	<i>n</i>	%
More than 30 (5)	6,940	36.2
21–30 (4)	3,322	17.3
11–20 (3)	2,644	13.8
6–10 (2)	1,236	6.4
1–5 (1)	980	5.1
None (0)	4,061	21.2
Total	19,181	100.0

Note. Work for Pay (PAYWORK): About how many hours do you spend in a typical 7-day week doing each of the following? Working for pay: 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30 hours; 5 = More than 30 hours (CCSSE question 10b); 335 missing cases.

week and 6.4% of students worked 6–10 hours a week and 5.1% of students worked only 1–5 hours a week. Over one fifth of the students (21.2%) reported they did not work for pay.

Public assistance. The research findings revealed that the vast majority (85.5%) of students did not use public assistance to pay for tuition (Table 4.9). Only 9.5% of students used public assistance as a major source for tuition and about 4.9% of students used public assistance as a minor source for tuition.

Table 4.9

Public Assistance Received by Participants

Public assistance (code)	<i>n</i>	%
Not a source (1)	16,182	85.5
Minor source (2)	936	4.9
Major source (3)	1,805	9.5
Total	18,923	99.9

Note. Public Assistance (PUBASSIT): Indicate which of the following are *sources* you use to pay your tuition at this college? (*Please respond to each item*): Public assistance: 1 = Not a source; 2 = Minor source; 3 = Major source (CCSSE question 18f); 593 missing cases.

Orientation program. The data revealed that 63.7% of students either did not nor were planning on attending a college orientation program or course, whereas 22.7% of students had attended a college orientation program or course, and 13.6% of students were planning on attending such an event (Table 4.10).

English. A large majority of study participants (81.7%) reported that English was their native or first language and only 18.2% reported English was not their native or first language (Table 4.11).

Table 4.10

Participants' Orientation Program or Course Attendance

Orientation (code)	<i>n</i>	%
Not done, no plan (1)	12,147	63.7
Have done (2)	4,335	22.7
Plan to do (3)	2,599	13.6
Total	19,081	100.0

Note. Orientation (ORIEN): Which of the following have you done, are you doing, or do you plan to do while attending this college: h. College orientation program or course: 1 = I have not done, nor plan to do; 2 = I plan to do; 3 = I have done (CCSSE question 8h); 435 missing cases.

Table 4.11

Participants' English Language Background

English (code)	<i>n</i>	%
Yes (1)	15,710	81.8
No (2)	3,499	18.2
Total	19,209	100.0

Note. English (ENGFIRST): Is English your first native (first) language?: 1 = Yes; 2 = No (CCSSE question 32); 307 missing cases.

Table 4.12

Study Participants' International Student Status

International student status (code)	<i>n</i>	%
No (2)	17,683	92.5
Yes (1)	1,430	7.5
Total	19,113	100.0

Note. International Students (INTERNAT): Are you an international student or foreign national?: 1 = Yes; 2 = No (CCSSE question 33); 404 missing cases.

International students. Only 7.5% of students in this study classified themselves as international students or foreign nationals, whereas 92.5% of students did not identify themselves as international students or foreign nationals (Table 4.12).

Dependent Variables

Grade point average. The findings clearly showed that very few students received low grades (Table 4.13). The data revealed the vast majority of students received grades averaging B or above. Only 13.2% of students reported a grade point average below B–, and only 2.9% of students received grades averaging C– or lower. In contrast, nearly 16.9% of students reported a grade point average of A, 27.0% students reported grades averaging A– to B+, and 24.6% of students reported their grade point average as B (24.6%), meaning that 68.5% of students reported grade point averages in the A to B range. Another 19.4% of students, about one fifth, reported having grade point average of B– to C+, 9.2% of students reported grades averaging a C, and only 2.9% of students reported a C– average or lower.

Total credit hours. Over half (54.6%) of the students in this study reported they had completed between 1 and 29 credit hours (Table 4.14): 34.5% of students reported the completion of 1–14 credit hours, and 21.9% of students reported having completed 15–29

Table 4.13

Grade Point Averages of Study Participants

Grades (code)	<i>n</i>	%
A (6)	3,127	16.9
A– to B+ (5)	4,983	27.0
B (4)	4,542	24.6
B– to C+ (3)	3,578	19.4
C (2)	1,702	9.2
C– or lower (1)	542	2.9
Total	18,474	100.0

Note. Grade Point Average (GPA2): At this college, in what range is your overall college grade average?: 1 = C– or lower; 2 = C; 3 = B– to C+; 4 = B; 5 = A– to B+; 6 = A (recoded, original CCSSE question 21); 1,042 missing cases.

Table 4.14

Total Credit Hours Completed by Study Participants

Total credit hours completed (code)	<i>n</i>	%
None (0)	2,502	13.1
1–14 (1)	6,591	34.5
15–29 (2)	4,195	21.5
30–44 (3)	2,499	13.1
45–60 (4)	1,918	10.0
Over 60 (5)	1,418	7.4
Total	19,123	99.6

Note. Total Credit Hours (TOTCHRS): How many TOTAL credit hours have you earned at this college, not counting the courses you are currently taking this term?: 0 = None; 1 = 1–14 credits; 2 = 15–29 credits; 3 = 30–44 credits; 4 = 45–60 credits; 5 = Over 60 credits (CCSSE question 23); 393 missing cases.

credit hours. Of the remaining students, 13.1% of students reported no credit hours completed, the same percentage as those who reported having completed 30–44 credit hours. In addition, 10.0% of students reported completing 45–60 credit hours, and 7.4% reported completing over 60 credit hours.

Research Findings from Ordinal Logistic Regression

For the ordinal logistic regression used in this research, the standard statistical significance level of $p < .05$ was employed. There was one degree of freedom for all variables. The Wald statistic value in ordinal logistic regression is a measure of the relative predictive strength of independent variables for outcome dependent variables. The higher the Wald statistic value the more predictive the independent variable is of the outcome dependent variable(s). For this study, higher Wald statistic values, generally over 100, were considered relatively strongly predictive. Higher Wald statistic values for this study were considered more predictive for higher grade point averages or more total credit hours. For ease of comparison, most research findings are presented in order of the Wald statistic value (denoted as “Wald”).

The standard error for predictive independent variables was generally small. For example, the standard error for all student engagement CCSSE benchmarks was very low (at .001), and the standard error for student engagement CCSSE individual variables from benchmarks also were generally low (although the standard error was higher for the individual categories of race/ethnicity).

The statistical estimate provided the “directionality” of the research findings. Depending on how independent variables were coded, a negative estimate could (or not) report an inverse relationship with a dependent variable. For example, if an independent

variable was coded 0 = no and 1 = yes, that variable would yield an “inverse” estimate for the same variable coded as 0 = yes and 1 = no (although the research findings are the same). It would have been helpful if the original dataset coded all values from lower to higher values.

In addition, pseudo R^2 , goodness-of-fit, and model fitting information was provided. The pseudo R^2 measures of Nagelkerke, McFadden, and Cox and Snell are provided by SPSS. The R^2 , also called the multiple coefficient of determination, indicates the proportion of variance in the dependent variable from the combined influence of two or more independent variables (George & Mallery, 2011). In *linear* models the pseudo R^2 represents the amount of variability in the dependent outcome variables from independent variables. However, it should be noted that for *logistic* regression models an easily interpretable and measure of strength between the dependent variable and independent variable is not available, although the Nagelkerke, McFadden, and Cox and Snell pseudo R^2 statistics have been proposed and are used in SPSS (Norušis, 2010, p. 58). The proportion of variance from the pseudo R^2 statistics can be viewed as a percentage (e.g., Nagelkerke = .017 is 1.7%). The McFadden pseudo R^2 is generally considered a conservative measure and is usually smaller than the Nagelkerke R^2 and the Cox and Snell R^2 . Overall the pseudo R^2 measures were very low (typically less than about 5.0% of variance), which does not speak to strength of the pseudo R^2 (note concerns above regarding these measures).

For goodness-of-fit information, the Pearson and deviance chi square statistic is provided. Overall, goodness-of-fit data provides information for how well a model fits observed data. The Pearson and deviance goodness-of-fit measures are derived from observed and expected frequencies. Although it should be noted that goodness-of-fit statistics should be used only for models that have reasonably large expected values in each

cell; in such cases neither statistic provides a dependable goodness-of-fit test (Norušis, 2010, p. 78). In this study's results there were many cells with small expected values or empty cells. Therefore, based on small or empty cells, caution should be taken with these statistics. Overall, large chi-square values and small significance values indicate that the model does *not* (note that this is the inverse for many statistical findings) fit the observed data well (George & Mallery, 2011; Norušis, 2010). The data revealed that there were many very large Pearson chi-square and deviant chi-square values, which does not indicate model goodness-of-fit (note concerns above regarding these measures).

Overall, model fitting information was provided by the $-2 \log$ likelihood. This measure indicates overall how well a model fits the data. This measure examines the difference between the two $-2 \log$ likelihood of the intercept only and the final, which results in a chi-square distribution. Smaller $-2 \log$ likelihood values indicate that the model fits the data well (a perfect model has a $-2 \log$ likelihood value of zero), whereas large chi-square values indicate a poor fit of the model (George & Mallery, 2011; Norušis, 2010). According to the data, there were many large $-2 \log$ likelihood values (far from a value of zero) and many large chi-square values, which indicates a poor fit of the model. It should be noted that model building was not the purpose of this research.

Grade Point Average

This section examines the research findings for student engagement variables and student characteristics for grade point average, addressing research questions 1, 2, and 3.

Grade point average and student engagement CCSSE benchmarks (research question 1). Research question 1: Do student engagement CCSSE benchmarks predict grade point average at Illinois community colleges?

The research findings revealed that four of the five student engagement CCSSE benchmarks had statistically significant relationships with grade point average. The four benchmarks that had a statistically significant relationship with grade point average (in order of Wald statistic value) were benchmark one, active and collaborative learning (actcoll_std; est. = .008, $p < .001$, Wald = 123.423); benchmark five, support for learning (support_std; est. = -.005, $p < .001$, Wald = 82.325); benchmark three, academic challenge (acchall_std; est. = .004, $p < .001$, Wald = 42.375); and benchmark four, student–faculty interaction (stufac_std; est. = -.001, $p = .034$, Wald = 4.477). CCSSE benchmark two, student effort (stueff_std; est. = .001, $p = .382$, Wald = 0.763) did not have a statistically significant relationship with grade point average (Table 4.15).

Of the four student engagement CCSSE benchmarks that had statistically significant relationship with grade point average, the following two benchmarks (noted by negative estimates) had inverse relationships with grade point average: benchmark five, support for learning (support_std; est. = -.005, $p < .001$, Wald = 82.325) and benchmark four, student–faculty interaction (although it had a low estimate of -.001) (stufac_std, est. = -.001, $p = .034$, Wald = 4.477). Discussion of these research findings may be found in chapter 5.

In addition to statistical significance, the research findings revealed that, for grade point average, by far the most predictive student engagement CCSSE benchmark was benchmark one, active and collaborative learning. That benchmark had a large Wald statistic value of 123.423 (actcoll_std: est. = .008, $p < .001$, Wald = 123.423). However, the next most predictive variable for grade point average (Wald = 82.325) had an inverse relationship with student engagement CCSSE benchmark five, support for learning (support_std; est. = -.005, $p < .001$, Wald = 82.325). The research finding for benchmark five, support for

Table 4.15

Grade Point Average by Student Engagement CCSSE Benchmarks (Research Question 1)

Benchmark ^a (variable, benchmark number)	Est.	SE	Wald	df	p
Learning (actcoll_std, Bench 1)	.008	.001	123.423	1	<.001
Support (support_std, Bench 5)	-.005	.001	82.325	1	<.001
Challenge (acchall_std, Bench 3)	.004	.001	42.375	1	<.001
Stud-Fac. (stufac_std, Bench 4)	.001	.001	4.477	1	.034
Effort (stueff_std, Bench 2)	.001	.001	0.763	1	.382

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aBenchmark one, active and collaborative learning (actcoll_std); Benchmark two, student effort (stueff_std); Benchmark three, academic challenge (acchall_std); Benchmark four, student–faculty interaction (stufac_std); and Benchmark five, support for learning (support_std).

learning, revealed that overall less support provided by the institution was predictive for higher grade point averages (however, as noted later, one of the student engagement CCSSE individual variables from that benchmark was strongly predictive for grade point average). Benchmark three, academic challenge, had a smaller Wald statistic value of 42.375, although it was still statistically significant (acchall_std; est. = .004, $p < .001$, Wald = 42.375). Although statistically significant, benchmark four, student–faculty interaction, had a very low Wald statistic value of 4.477 (and a very low negative estimate of $-.001$), which resulted in an inverse relationship (stufac_std; est. = $-.001$, $p = .034$, Wald = 4.477).

Overall the research findings revealed that all student engagement CCSSE benchmarks for grade point average and total credit hours had a very low standards error of .001 and one degree of freedom. In addition the pseudo R^2 measures were Nagelkerke = .017, Cox and Snell = .016, and McFadden = .005; the good-of-fit measures were Pearson $\chi^2(92,490, N = 18,435) = 91,710.589$, $p = .965$, and deviance $\chi^2(92,490, N = 18,435) = 60,170.481$, $p = 1.000$; and the model fitting information of the intercept only $-2 \log$

likelihood = 60,477.017 and the final $-2 \log$ likelihood final = 60,171.735, $\chi^2(5, n = 18,435)$ = 305.282, $p < .001$. Overall these measures in the research should be viewed cautiously.

Grade point average and student engagement CCSSE individual variables (research question 2). Research question 2: Do student engagement CCSSE individual variables (from benchmarks) predict grade point average at Illinois community colleges?

Benchmark one. Student engagement CCSSE benchmark one, active and collaborative learning, was based on seven individual variables. For reference, student engagement CCSSE benchmark one was statistically significant for grade point average (actcoll_std; est. = .008, $p < .001$, Wald = 123.423).

The research findings revealed that all seven student engagement CCSSE individual variables for benchmark one (active and collaborative learning) had statistically significant relationships with grade point average (in order of Wald statistic value; see Table 4.16): ask questions in class or contributed to class discussion (Ask questions in class, CLQUEST; est. = 456, $p < .001$, Wald = 707.697); tutored or taught others (paid or voluntary; Tutored/taught others, TUTOR; est. = .269, $p < .001$, Wald = 147.361); discussed ideas from your reading or classes with others outside of class (students, family members, co-workers, etc.) (Discuss out of class, OOCIDEAS; est. = .092, $p < .001$, Wald = 36.469); made a class presentation (Make class presentat., CLPRESEN, est. = $-.091$, $p < .001$, Wald = 34.416); worked with classmates outside of class to prepare assignments (Others out of class, OCCGRP; est. = $-.103$, $p < .001$, Wald = 30.904); participated in a community-based project as part of a regular course (Community project, COMMPROJ; est. = $-.112$, $p < .001$, Wald = 23.271); and worked with other students on projects during class (Others in class, CLASSGRP; est. = $-.052$, $p = .002$; Wald = 9.662). Four of the student engagement

Table 4.16

Grade Point Average by CCSSE Individual Variables from Benchmark One, Active and Collaborative Learning (Research Question 2)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
Ask questions in class (CLQUEST)	.456	.017	707.697	1	<.001
Tutored/taught others (TUTOR)	.269	.022	147.361	1	<.001
Discuss out of class (OOCIDEAS)	.092	.015	36.46	1	<.001
Make class presentat. (CLPRESEN)	-.091	.016	34.416	1	<.001
Others out of class (OCCGRP)	-.103	.018	30.904	1	<.001
Community project (COMMPROJ)	-.112	.023	23.271	1	<.001
Others in class (CLASSGRP)	-.052	.017	9.662	1	.002

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aAsk questions in class (CLQUEST): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Asked questions in class or contributed to class discussion: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4a); Make class presentation (CLPRESEN): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Made a class presentation: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4b); Others in class (CLASSGRP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked with other students on projects during class: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4f); Others out of class (OCCGRP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked with classmates outside of class to prepare assignments: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4g); Tutored/taught others (TUTOR): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Tutored or taught other students (paid or voluntary): 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4h); Community project (COMMPROJ): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Participated in a community-based project as part of a regular course: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4i); Discuss out of class (OOCIDEAS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed ideas from your reading or classes with others outside of class (students, family members, co-workers, etc.): 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4r).

CCSSE individual variables that were statistically significant, although with small Wald statistic values, had negative estimates. See Table 4.16 for additional information.

In addition, the research findings clearly revealed that there was one student engagement CCSSE individual variable from benchmark one (active and collaborative learning) that was extremely predictive for grade point average: students who asked questions in class or contributed to class discussion (CLQUEST; est. = .456, $p = .000$, Wald = 707.697). That variable had an extremely large Wald statistic value of 707.697. In addition, the variable of students who tutored or taught other students (paid or voluntary) was strongly predictive for higher grade point averages (TUTOR; est. = .269, $p = .000$, Wald = 147.361). As with all student engagement CCSSE benchmarks, all student engagement CCSSE individual variables from benchmarks for both grade point average and total credit hours had low standard errors and one degree of freedom.

The pseudo R^2 measures were Nagelkerke = .061, Cox and Snell = .059, and McFadden = .019; the good-of-fit measures were Pearson $\chi^2(16,388, N = 17,742) = 18,385.102, p < .001$, and deviance $\chi^2(16,388, N = 17,742) = 14,147.538, p = 1.000$; and the model fitting information of the -2 log likelihood of intercept only = 22,364.035 and the -2 log likelihood final = 21,283.930, $\chi^2(7, N = 17,742) = 1,080.105, p < .001$.

Benchmark two. Student engagement CCSSE benchmark two, student effort, was based on eight individual variables. For reference, student engagement CCSSE benchmark two was not statistically significant with grade point average (stueff_std; est. = .001, $p = .382$, Wald = 0.763).

Although the overall student engagement CCSSE benchmark two (student effort) was not statically significant, surprisingly six of the eight student engagement CCSSE individual

variables had statistically significant relationships with grade point average: come to class without complete reading or assignments (Unprepared, CLUNPREP; est. = $-.485$, $p < .001$, Wald = 633.719); time preparing for class (studying, reading, writing, rehearsing, doing homework, or other activities related to your program) (Time preparing, ACADPRO1; est. = $.239$, $p < .001$, Wald = 287.164); number of books read on your own (not assigned) for personal enjoyment or academic enrichment (Read books, READOWN; est. = $.127$, $p < .001$, Wald = 84.797); skills lab (writing, math, etc.) (Lab: writing, math, USELAB; est. = $-.151$, $p < .001$, Wald = 83.139); computer lab (Lab: computer, USECOMLB; est. = $-.126$, $p < .001$, Wald = 75.100); and prepared two or more drafts of a paper or assignment before turning it in (≥ 2 drafts, REWROPAP; est. = $-.067$, $p < .001$, Wald = 18.558). Four of the six student engagement CCSSE individual variables that were statistically significant with grade point average had negative estimates (Table 4.17). See chapter 5 for a discussion of research results (e.g., findings for “unprepared” for class).

The two student engagement CCSSE individual variables for benchmark two (student effort) that did not have a statistically significant relationship with grade point average were as follows: worked on a paper or project that required integrating of ideas or information from various sources (Integrate sources, INTEGRAT; est. = $.025$, $p = .137$, Wald = 2.213) and peer or other tutoring (Use tutor, USETUTOR; est. = $-.024$, $p = .190$, Wald = 1.717).

The data further revealed that there was a very strong predictive relationship for the student engagement CCSSE individual variables from benchmark two (student effort), not coming to class without complete reading or assignments and grade point average (CLUNPREP; est. = $-.485$, $p < .001$, Wald = 633.719). That variable was coded for low

Table 4.17

Grade Point Average by CCSSE Individual Variables from Benchmark Two, Student Effort (Research Question 2)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
Unprepared (CLUNPREP)	-.485	.019	633.719	1	<.001
Time preparing (ACADPRO1)	.239	.014	287.164	1	<.001
Read books (READOWN)	.127	.014	84.797	1	<.001
Lab: writing, math (USELAB)	-.151	.017	83.139	1	<.001
Lab: computer (USECOMLB)	-.126	.015	75.100	1	<.001
≥2 drafts (REWROPAP)	-.067	.016	18.558	1	<.001
Integrate sources (INTEGRAT)	.025	.017	2.213	1	.137
Use tutor (USETUTOR)	-.024	.018	1.717	1	.190

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aTwo or more 2 drafts (REWROPAP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Prepared two or more drafts of a paper or assignment before turning it in: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4c); Integrate sources (INTEGRAT): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked on a paper or project that required integrating ideas or information from various sources: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4d); Unprepared (CLUNPREP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Come to class without complete reading or assignments: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4e); Read books (READOWN): During the current school year, about how much reading and writing have you done at this college? Number of books read on your own (not assigned) for personal enjoyment or academic enrichment: 1 = None; 2 = Between 1 and 4; 3 = Between 5 and 10; 4 = Between 11 and 20; 5 = More than 20 (CCSSE question 6b); Time preparing for class (ACADPRO1): Hours spend per week: About how many hours do you spend in a typical 7-day week doing each of the follow? Preparing for class (studying, reading, writing, rehearsing, doing homework, or other activities related to your program): 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30 hours; 5 = More than 30 hours (CCSSE question 10a); Use tutor (USETUTOR): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Peer or other tutoring: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13d1); Lab: writing, math (USELAB): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Skill labs (writing, math, etc.): 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13e1); Lab: computer (USECOMLB): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Computer lab: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13h1).

values (e.g., 1 = never) for students not (never) unprepared for class, whereas higher values (e.g., 4 = very often) reported that students were often (or very often) unprepared for class. Therefore a negative estimate for that variable is interpreted as students who were not *unprepared* for class (a double negative). See below for additional coding information for that variable.

In addition, a similar conceptual student engagement CCSSE individual variable that also was strongly predictive for grade point average was the amount of time a student spent per week preparing for class (studying, reading, writing, rehearsing, doing homework, or other activities related to their program) (ACADPRO1; est. = .239, $p < .001$, Wald = 287.164). The pseudo R^2 measures were Nagelkerke = .084, Cox and Snell = .081, and McFadden = .026; the good-of-fit measures were Pearson $\chi^2(44,427, N = 16,924) = 48,479.888, p < .001$, and deviance $\chi^2(44,427, N = 16,924) = 34,399.200, p = 1.000$; and the model fitting information of the -2 log likelihood of intercept only = 42,282.131 and the -2 log likelihood final = 40,858.367, $\chi^2(8, N = 16,924) = 1,423.764, p < .001$.

Benchmark three. Student engagement CCSSE benchmark three, academic challenge, was based on 10 individual variables. For reference, student engagement CCSSE benchmark three was statistically significant for grade point average (acchall_std; est. = .004, $p < .001$, Wald = 42.375).

The following nine of 10 student engagement CCSSE individual variables for benchmark three (academic challenge) had statistically significant relationships with grade point average (Table 4.18): analyzing the basic elements of an idea, experience, or theory (Analysis, ANALYSE; est. = .238, $p < .001$, Wald = 117.238); applying theories or concepts to practical problems or in new situations (Application, APPLYING; est. = .139, $p < .001$,

Table 4.18

Grade Point Average by CCSSE Individual Variables from Benchmark Three, Academic Challenge (Research Question 2)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
Analysis (ANALYSE)	.238	.022	117.238	1	<.001
Application (APPLYING)	.139	.022	39.697	1	<.001
Exams (EXAMS)	-.079	.013	38.498	1	<.001
Written papers (WRITEANY)	-.072	.014	27.945	1	<.001
Discernment (EVALUATE)	-.106	.020	27.115	1	<.001
College>study (ENVSCHOL)	-.075	.018	17.281	1	<.001
Synthesis (SYNTHESE)	.093	.022	17.169	1	<.001
Work hard (WORKHARD)	.071	.017	16.984	1	<.001
Read texts (READASGN)	-.040	.015	7.333	1	.007
Perform new (PERFORM)	-.011	.019	0.308	1	.579

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aWork hard (WORKHARD): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4p); Analysis (ANALYSE): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Analyzing the basic elements of an idea, experience, or theory: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5b); Synthesis (SYNTHESE): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Synthesis and organizing ideas, information, or experience in new ways analyzing the basic elements of an idea, experience, or theory: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5c); Discernment (EVALUATE): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Making judgments about the value or soundness of information, arguments, or methods: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5d); Application (APPLYING): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Applying theories or concepts to practical problems or in new situations: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5e); Perform new skill (PERFORM): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Using information you have read or heard to perform a new skill: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5f); Read texts (READASGN): During the current school year, about how much reading and writing have you done at this college?

Table 4.18 (continued)

Number of assigned textbooks, manuals, books, or book-length packs of course readings: 1 = None; 2 = Between 1 and 4; 3 = Between 5 and 10; 4 = Between 11 and 20; 5 = More than 20 (CCSSE question 6a); Written papers (WRITEANY): During the current school year, about how much reading and writing have you done at this college? Number of written papers or reports of any length: 1 = None; 2 = Between 1 and 4; 3 = Between 5 and 10; 4 = Between 11 and 20; 5 = More than 20 (CCSSE question 6c); Exams (EXAMS): Mark the box that best represents the extent to which your examinations during the current school year have challenged you to do your best work at this college: 1 = Extremely easy; 2 = 2; 3 = 3; 4 = 4; 5 = 5; 6 = 6; 7 = Extremely challenging (CCSSE question 7); College encourages studying (ENVSCHOL): Amount of emphasis by college: To what extent does this college emphasize each of the following? Encouraging you to spend significant amounts of time studying: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9a).

Wald = 39.697); the extent to which your examinations during the current school year have challenged you to do your best work at this college (EXAMS; est. = $-.079$, $p < .001$, Wald = 38.498); number of written papers or reports of any length (Written papers, WRITEANY; est. = $-.072$, $p < .001$, Wald = 27.945); making judgments about the value or soundness of information, arguments, or methods (Discernment, EVALUATE; est. = $-.106$, $p < .001$, Wald = 27.115); the college encourages you to spend significant amounts of time studying (College>study, ENVSCHOL; est. = $-.075$, $p < .001$, Wald = 17.281); synthesis and organizing ideas, information, or experience in new ways and analyzing the basic elements of an idea, experience, or theory (Synthesis, SYNTHESZ; est. = $.093$, $p < .001$, Wald = 17.169); worked harder than you thought you could to meet an instructor's standards or expectations (Work hard, WORKHARD; est. = $.071$, $p < .001$, Wald = 16.984); and number of assigned textbooks, manuals, or book-length packs of course readings (Read text, READASGN, est.; = $-.040$, $p = .007$, Wald = 7.333). Five of the nine student engagement CCSSE individual variables that were statistically significant, although with small Wald statistic values, had negative estimates. Student engagement CCSSE individual variable from benchmark three (academic challenge), using information you have read or heard to

perform a new skill, was the only individual variable that did not have a statistically significant relationship with grade point average (Perform new, PERFORM, est. = $-.011$, $p = .597$, Wald = 0.308).

Although nine of the 10 student engagement CCSSE individual variables had statistically significant relationships with grade point average, there was only individual variable, analyzing the basic element of an idea, experience, or theory, that was strongly predictive for grade point average (ANALYSE; est. = $.238$, $p < .001$, Wald = 117.238). The remaining student engagement CCSSE individual variables from student engagement benchmark three (academic challenge) had low Wald statistic values.

The pseudo R^2 measures were Nagelkerke = $.028$, Cox and Snell = $.027$, and McFadden = $.008$; the good-of-fit measures were Pearson $\chi^2(65,385, N = 16,994) = 68,022.564$, $p < .001$, and deviance $\chi^2(65,385, N = 16,994) = 46,189.507$, $p = 1.000$; and the model fitting information of the -2 log likelihood of intercept only = 49,946.46 and the -2 log likelihood final = 49,484.851, $\chi^2(610, N = 16,994) = 461.613$, $p < .001$.

Benchmark four. Student engagement CCSSE benchmark four, student–faculty interaction, was based on six individual variables. For reference, student engagement CCSSE benchmark four was statistically significant for grade point average (note the statistical significance value and the small negative estimate) (stufac_std; est. = $-.001$, $p = .034$, Wald = 4.477).

Although student engagement CCSSE benchmark four (student–faculty interaction) was statistically significant at $p = .034$, only two of the six student engagement CCSSE individual variables had statistically significant relationships with grade point average (Table 4.19): received prompt feedback (written or oral) from instructors on your performance

(Prompt fac. info., FACFEED; est. = .322, $p < .001$, Wald = 357.239) and used e-mail to communicate with an instructor, although with a small Wald statistic value and a negative estimate (Email to fac., EMAIL; est. = $-.046$, $p = .003$, Wald = 8.568).

The following four of six student engagement CCSSE individual variables for CCSSE benchmark four (student–faculty interaction) did not have statistically significant relationship with grade point average: discussed ideas from your reading or classes with instructors outside of class (Fac. out of class, FACIDEAS; est. = $-.024$, $p = .218$, Wald = 1.520); worked with instructors on activities other than coursework (Fac. non-class, FACOTH; est. = $-.024$, $p = .243$, Wald = 1.363); talked about career plans with an instructor or advisor (Talk career plans, FACPLANS; est. = $-.017$, $p = .339$, Wald = 0.913); and discussed grades or assignments with an instructor (Talk grade/work, FACGRADE; est. = $-.013$, $p = .506$, Wald = 0.020).

One student engagement CCSSE individual variable from benchmark four (student–faculty interaction), if students received prompt feedback (written or oral) from instructors on their performance, was strongly predictive for grade point average (FACFEED; est. = .322, $p < .001$, Wald = 357.239). All other student engagement CCSSE individual variables from that benchmark had extremely small Wald statistic values.

The pseudo R^2 measures were Nagelkerke = .022, Cox and Snell = .021, and McFadden = .006; the good-of-fit measures were Pearson $\chi^2(9,009, N = 17,535) = 11,618.172$, $p < .001$, and deviance $\chi^2(9,009, N = 17,535) = 9,319.810$, $p = .011$; and the model fitting information of the -2 log likelihood of intercept only = 15,948.420 and the -2 log likelihood final = 15,579.565, $\chi^2(6, N = 17,535) = 368.855$, $p < .001$.

Table 4.19

Grade Point Average by CCSSE Individual Variables from Benchmark Four, Student–Faculty Interaction (Research Question 2)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
Prompt fac. info. (FACFEED)	.322	.017	357.239	1	<.001
Email to fac. (EMAIL)	–.046	.016	8.568	1	.003
Fac. out of class (FACIDEAS)	–.024	.020	1.520	1	.218
Fac. non-class (FACOTH)	–.024	.021	1.363	1	.243
Talk career plans (FACPLANS)	–.017	.018	0.913	1	.330
Talk grade/work (FACGRADE)	–.013	.020	0.443	1	.506

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aEmail to faculty (EMAIL): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Used e-mail to communicate with an instructor: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4k); Talk grades/work with faculty (FACGRADE): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed grades or assignments with an instructor: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4l); Talk career plans (FACPLANS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Talked about career plans with an instructor or advisor: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4m); Talk class ideas to faculty outside of class (FACIDEAS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed ideas from your reading or classes with instructors outside of class: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4n); Prompt faculty feedback (FACFEED): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Received prompt feedback (written or oral) from instructors on your performance: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4o); Faculty non-class (FACOTH): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked with instructors on activities other than coursework: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4q).

Benchmark five. Student engagement CCSSE benchmark five, support for learning, was based on seven individual variables. For reference, student engagement CCSSE benchmark five was statistically significant with grade point average, although with a negative estimate (support_std, est. = –.005, $p < .001$, Wald = 82.325).

The following five student engagement CCSSE individual variables from benchmark five, support for learning had statistically significant relationships with grade point average (Table 4.20): the college provides the support you need to help you succeed at this college (College support, ENVSUPRT; est. = .250, $p < .001$, Wald = 174.700); the college provides the support you need to thrive socially (Social support, ENVSOCAL; est. = $-.153$, $p < .001$, Wald = 53.077); the college provides the financial support you need to afford your education (Financial support, FINSUPP; est. = $-.094$, $p < .001$, Wald = 49.239); use career counseling (Career counsel., USECACOU; est. = $-.071$, $p < .001$, Wald = 13.488); and use academic advising/planning (Academic advising, USEACAD; est. = $-.043$, $p = .028$, Wald = 4.855). Of the five student engagement CCSSE individual variables that had statistically significant relationships with grade point average, four had negative estimates.

Two of the seven student engagement CCSSE individual variables for benchmark five (support for learning) did not have statistically significant relationships with grade point average at the $p < .05$ level (Table 4.20): the college encourages contact among students from different economic, social, and racial or ethnic backgrounds (note significance of .057) (College > diversity, ENVDIVRS; est. = .032, $p = .057$, Wald = 3.622); and the college helps students cope with your non-academic responsibilities (work, family, etc.) (College help, ENVNACAD; est. = .033, $p = .092$, Wald = 2.846).

In addition, the research findings revealed that only one student engagement CCSSE individual variable from benchmark five (support for learning), if the student's college provided the support the student needed to help them succeed at that college, was strongly predictive for grade point average (ENVSUPRT; est. = .250, $p < .001$, Wald = 174.700). The pseudo R^2 measures were Nagelkerke = .018, Cox and Snell = .017, and McFadden =

Table 4.20

Grade Point Average by CCSSE Individual Variables from Benchmark Five, Support for Learning (Research Question 2)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
College support (ENVSUPRT)	.250	.019	174.700	1	< .001
Social support (ENVSOCAL)	-.153	.021	53.077	1	< .001
Financial support (FINSUPP)	-.094	.013	49.239	1	< .001
Career counsel.(USECACOU)	-.071	.019	13.488	1	< .001
Academic advising (USEACAD)	-.043	.020	4.855	1	.028
College > diversity (ENVDIVRS)	.032	.017	3.622	1	.057
College help (ENVNACAD)	.033	.020	2.846	1	.092

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aCollege support (ENVSUPRT): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the support you need to help you succeed at this college: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9b); College encourages diversity (ENVDIVRS): Amount of emphasis by college: To what extent does this college emphasize each of the following? Encouraging contact among students from different economic, social, and racial or ethnic backgrounds: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9c); College help non-academics (ENVNACAD): Amount of emphasis by college: To what extent does this college emphasize each of the following? Helping you cope with your non-academic responsibilities (work, family, etc.): 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9d); Social support (ENVSOCAL): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the support you need to thrive socially: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9e); Financial support (FINSUPP): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the financial support you need to afford your education: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9f); Academic advising (USEACAD): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Academic advising/planning: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13a1); Career counseling (USECACOU): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Career counseling: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13b1).

.005: the good-of-fit measures were Pearson $\chi^2(20,648, N = 17,488) = 24,268.027, p < .001$, and deviance $\chi^2(20,648, N = 17,488) = 19,190.638, p = 1.000$; and the model fitting information of the $-2 \log$ likelihood of intercept only = 27,807.800 and the $-2 \log$ likelihood final = 27,510.555, $\chi^2(7, N = 17,488) = 297.245, p < .001$.

Grade point average and student characteristics (research question 3). Research question 3: Do student characteristics predict grade point average at Illinois community colleges?

The research findings revealed that several student characteristics had statistically significant relationships with grade point average. Of the 15 individual student characteristics (including the four subcategories of race/ethnicity) the following 11 student characteristics had statistically significant relationships with grade point average (Table 4.21): age (AGENEW; est. = .260, $p = .000$, Wald = 717.012); gender (SEX; est. = .295, $p < .001$, Wald = 107.119); married (MARRY; est. = $-.407$, $p < .001$, Wald = 94.572); Black race/ethnicity (est. = $-.562$, $p < .001$, Wald = 47.394); White race/ethnicity (est. = .449, $p < .001$, Wald = 36.912), enrollment (iweight; est. = $-.082$, $p < .001$, Wald = 30.900); Asian race/ ethnicity (est. = .465, $p < .001$, Wald = 23.565), public assistance (PUBASSIT; est. = .105, $p = .000$, Wald = 20.763), orientation program (ORIEN; est. = $-.057$, $p = .001$, Wald = 11.918), English (ENGFIRST; est. = .129, $p = .005$, Wald = 7.947), and dependents (CAREDEO1; est. = $-.023$, $p = .013$, Wald = 6.103).

The student characteristics that did not have statically significant relationships with grade point average were: students who work for pay (PAYWORK, est. = $-.012$, $p = .095$, Wald = 2.779); international students (INTERNAT; est. = $-.077$, $p = .208$, Wald = 1.583); Hispanic race/ethnicity (est. = $-.086$, $p = .289$, Wald = 1.124), and having children

Table 4.21

Grade Point Average by Student Characteristics (Research Question 3)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
Age (AGENEW)	.260	.010	717.012	1	<.001
Sex (SEX)	.295	.029	107.11	1	<.001
Married (MARRY)	-.407	.042	94.572	1	<.001
Enrollment (iweight)	-.082	.015	30.900	1	<.001
Pub. Assist. (PUBASSIT)	-.105	.023	20.763	1	<.001
Orientation (ORIEN)	-.057	.016	11.918	1	.001
English (ENGFIRST)	.129	.046	7.947	1	.005
Dependents (CAREDEO1)	-.023	.009	6.103	1	.013
Work for Pay (PAYWORK)	-.012	.007	2.779	1	.095
Internat. (INTERNAT)	-.077	.061	1.583	1	.208
Children (HAVKID)	.014	.042	0.119	1	.730
Race/Ethnicity					
Black	-.562	.082	47.34	1	<.001
White	.449	.074	36.912	1	<.001
Asian	.465	.096	23.565	1	<.001
Hispanic	-.086	.081	1.124	1	.289

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aGender (SEX): Your gender: 1 = Male; 2 = Female (CCSSE question 30); Age (AGENEW): Mark your age group: 1 = 18–19, 2 = 20–21, 3 = 22–24, 4 = 25–29, 5 = 30–39, 6 = 40–49, 7 = 50–64, 8 = 65+ (recoded, original CCSSE question 29); Race/Ethnicity (RERACE): What is your racial identification? (Mark all that apply): 1 = American Indian or other Native American; 2 = Asian, Asian American or Pacific Islander; 3 = Native Hawaiian; 4 = Black or African American; 5 = White, Non-Hispanic; 6 = Hispanic, Latino, Spanish; 7 = Other (CCSSE question 34); Enrollment (part time) (ENRLMENT): Thinking about this current academic term, how would you characterize your enrollment at this college?: 1 = Less than full time; 2 = full time (CCSSE question 2). The CCSSE weighted variable of Enrollment (part time) (iweight) was used to measure enrollment for inferential statistics.; Married (MARRY): Are you married?: 1 = Yes; 2 = No (CCSSE question 31); Children (HAVKID): Do you have children who live with you?: 1 = Yes; 2 = No (CCSSE question 28); Dependents (CAREDEO1): About how many hours do you spend in a typical 7-day week doing each of the following? Providing care for dependents living with you (parents, children, spouse, etc.): 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30 hours; 5 = More than 30 hours (CCSSE question 10d); Work for Pay (PAYWORK): About how many hours do you spend in a typical 7-day week doing each of the following? Working for pay: 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30 hours; 5 =

Table 4.21 (continued)

More than 30 hours (CCSSE question 10b); Public Assistance (PUBASSIT): Indicate which of the following are *sources* you use to pay your tuition at this college? (*Please respond to each item*): Public assistance: 1 = Not a source; 2 = Minor source; 3 = Major source (CCSSE question 18f); Orientation (ORIEN): Which of the following have you done, are you doing, or do you plan to do while attending this college: h. College orientation program or course: 1 = I have not done, nor plan to do; 2 = I plan to do; 3 = I have done (CCSSE question 8h); English (ENGFIRST): Is English your first native (first) language?: 1 = Yes; 2 = No (CCSSE question 32); International Students (INTERNAT): Are you an international student or foreign national?: 1 = Yes; 2 = No (CCSSE question 33).

(HAVKID; est. = .014, $p = .730$, Wald = 0.119). See below for additional information on student characteristics.

The following student characteristics, with statistically significant relationships, had negative estimates with grade point average: married, enrollment, public assistance, orientation program, dependents, working for pay, international student, Black race/ethnicity, and Hispanic race/ethnicity. All of those student characteristics with negative estimates had small Wald statistic values (except married). See coding and description of variables below for additional information on negative estimates.

By far the strongest student characteristic predictor for grade point average was student age, which had an extremely large Wald statistic value of 717.012 (AGENEW; est. = .260, $p = .000$, Wald = 717.012). The characteristic of student age was coded so that younger students had lower values and older students had higher values. Therefore, that research findings indicated that older students were much more likely to have higher grade point averages.

Another strong student characteristic predictor of grade point average was gender. The strength of prediction for that student characteristic (SEX; est. = .295, $p < .001$, Wald = 107.119) was similar to the strength of prediction for the student characteristic of married

students (MARRY; est. = $-.407$, $p < .001$, Wald = 94.572). The student characteristic for gender (SEX) was coded 1 = male and 2 = female. Therefore, the data revealed that being male was predictive for having a higher grade point average.

In addition, the student characteristics of the marital status was strongly predictive for grade point average (MARRY; est. = $-.407$, $p < .001$, Wald = 94.572). The student characteristic of married was coded as 1 = yes, married and 2 = no, not married (paraphrased). The research findings for that student characteristic revealed a negative estimate (est. = $-.407$), which indicates that students who were not married were more likely to receive higher grades.

The pseudo R^2 measures were Nagelkerke = .130, Cox and Snell = .125, and McFadden = .041; the good-of-fit measures were Pearson $\chi^2(70,303, N = 17,182) = 73,553.879$, $p < .001$, and deviance $\chi^2(70,303, N = 17,182) = 48,215.494$, $p = 1.000$; and the model fitting information of the -2 log likelihood of intercept only = 53,006.018 and the -2 log likelihood final = 50,708.734, $\chi^2(17, N = 17,182) = 2,297.284$, $p < .001$.

Total Credit Hours

This section examines the research findings for student engagement variables and student characteristics for total credit hours, addressing research questions 4, 5, and 6.

The purpose of this research was to determine which student engagement variables and student characteristics predict student academic achievement. One of the outcome measures of this study was student academic achievement.

CCSSE question 17 asks students to respond to six different possible “reasons/goals for attending this college.” Therefore, in order to focus on academic achievement, that variable was recoded into “academic goals” and “nonacademic goals” (sumq17code). It was

reasoned (and strongly suggested) that the outcome of total credit hours would be skewed if both academic and nonacademic goals were combined. In addition, it is recognized that there are generally more total credit hours required for students seeking academic degrees (“academic goals”) than, for example, students taking a class or classes for self-improvement or personal enjoyment. Thus, to focus on academic achievement, the three academic goals of transfer to a 4-year college or university, obtain an associate degree, and complete a certificate program were recoded as follows: not a goal, from 1 to 0; secondary goal, from 2 to 1; and primary goal, from 3 to 2. Likewise, the three nonacademic goals of self-improvement/personal enjoyment, change careers, and obtain or update job-related skills were recoded as follows: not a goal, from 1 to 0; secondary goal, from 2 to –1 and; primary goal, from 3 to –2. Based on consultation and advice, in order to focus on academic achievement and to not significantly reduce the size of the dataset, it was decided to use this recoding method.

Total credit hours and student engagement CCSSE benchmarks (research question 4). Research question 4: Do student engagement CCSSE benchmarks predict total credit hours at Illinois community colleges?

The research findings revealed that four of the five student engagement CCSSE benchmarks had statistically significant relationships with total credit hours (Table 4.22): benchmark one, active and collaborative learning (actcoll_std; est. = .009, $p < .001$, Wald = 179.756); benchmark four, student–faculty interaction (stufac_std; est. = .006, $p < .001$, Wald = 77.297), benchmark three, academic challenge (acchall_std; est. = .003, $p < .001$, Wald = 27.174), and benchmark five, support for learning (support_std; est. = –.003, $p < .001$, Wald = 18.664). In addition, the variable for educational goals was statistically

significant (sumq17code; est. = .094, $p < .001$, Wald = 235.551). There was not a statistically significant relationship between benchmark two (student effort) and total credit hours.

Of the four student engagement CCSSE benchmarks that had statistically significant relationship with total credit hours, only benchmark five (support for learning) had an inverse relationship with total credit hours, although with a small Wald statistic value.

As with grade point average, the research findings indicated that student engagement CCSSE benchmark one (active and collaborative learning), with a robust Wald statistic value of 179.756, was clearly the most predictive for total credit hours (actcoll_std; est. = .009, $p < .001$, Wald = 179.756). That was followed by benchmark four (student–faculty interaction) as a predictor of total credit hours (stufac_std; est. = .006, $p < .001$, Wald = 77.297). The remaining student engagement CCSSE benchmarks were not strongly predictive for total credit hours.

Table 4.22

Total Credit Hours by Student Engagement CCSSE Benchmarks (Research Question 4)

Benchmarks ^a (variable, number)	Est.	SE	Wald	df	p
Learning (actcoll_std, Bench 1)	.009	.001	179.756	1	<.001
Stud-Fac. (stufac_std, Bench 4)	.006	.001	77.297	1	<.001
Challenge (acchall_std, Bench 3)	.003	.001	27.174	1	<.001
Support (support_std, Bench 5)	–.003	.001	18.664	1	<.001
Effort (stueff_std, Bench 2)	< .001	.001	0.599	1	.439
Students Educational Goals (sumq17code)	.094	.006	235.551	1	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aBenchmark one, active and collaborative learning (actcoll_std); benchmark two, student effort (stueff_std); benchmark three, academic challenge (acchall_std); benchmark four, student–faculty interaction (stufac_std); and benchmark five, support for learning (support_std).

The pseudo R^2 measures were Nagelkerke = .054, Cox and Snell = .052, and McFadden = .016; the good-of-fit measures were Pearson $\chi^2(94,769, N = 19,039) = 96,086.911, p > .001$, deviance $\chi^2(94,769, N = 19,039) = 62,019.451, p = 1.000$; and the model fitting information of the -2 log likelihood of intercept only = 63,029.996 and the -2 log likelihood final = 62,019.451, $\chi^2(6, N = 19,039) = 1,010.546, p < .001$.

Total credit hours and student engagement CCSSE individual variables

(research question 5). Research question 5: Do student engagement CCSSE individual variables (from benchmarks) predict total credit hours at Illinois community colleges?

Benchmark one. Student engagement CCSSE benchmark one, active and collaborative learning was based on seven individual variables. For reference, student engagement CCSSE benchmark one had a statistically significant relationship with total credit hours (actcoll_std; est. = .009, $p < .001$, Wald = 179.756).

Five of seven student engagement CCSSE individual variables from benchmark one (active and collaborative learning) had statistically significant relationships with total credit hours (Table 4.23): worked with classmates outside of class to prepare assignments (Others out of class, OCCGRP; est. = .248, $p < .001$, Wald = 184.290); made a class presentation (Make class presentat., CLPRESEN; est. = .209, $p < .001$, Wald = 182.247); discussed ideas from your reading or classes with others outside of class (students, family members, co-workers, etc.) (Discuss out of class, OOCIDEAS; est. = .066, $p < .001$, Wald = 19.346); participated in a community-based project as part of a regular course (Community project, COMMPROJ; est. = .096, $p < .001$, Wald = 17.513); and tutored or taught other students (paid or voluntary) (Tutored/taught others, TUTOR; est. = .075, $p = .001$, Wald = 11.897).

Table 4.23

Total Credit Hours by CCSSE Individual Variables from Benchmark One, Active and Collaborative Learning (Research Question 5)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
Others out of class (OCCGRP)	.248	.018	184.290	1	<.001
Make class presentat. (CLPRESEN)	.209	.015	182.247	1	<.001
Discuss out of class (OOCIDEAS)	.066	.015	19.346	1	<.001
Community project (COMMPROJ)	.096	.023	17.513	1	<.001
Tutored/taught others (TUTOR)	.075	.022	11.87	1	.001
Others in class (CLASSGRP)	-.021	.017	1.521	1	.217
Ask questions in class (CLQUEST)	.017	.017	0.977	1	.323
Students educational goals (sumq17code)	.086	.006	187.821	1	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aAsk questions in class (CLQUEST): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Asked questions in class or contributed to class discussion: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4a); Make class presentation (CLPRESEN): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Made a class presentation: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4b); Others in class (CLASSGRP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked with other students on projects during class: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4f); Others out of class (OCCGRP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked with classmates outside of class to prepare assignments: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4g)

Tutored/taught others (TUTOR): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Tutored or taught other students (paid or voluntary): 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4h); Community project (COMMPROJ): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Participated in a community-based project as part of a regular course: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4i); Discuss out of class (OOCIDEAS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed ideas from your reading or classes with others outside of class (students, family members, co-workers, etc.): 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4r).

In addition, educational goals was statistically significant for total credit hours (sumq17code; est. = .086, $p < .001$, Wald = 187.821).

The following two of the seven student engagement CCSSE individual variables from benchmark one (active and collaborative learning) did not have statistically significant relationships with total credit hours: worked with other students on projects during class (Others in class, CLASSGRP; est. = $-.021$, $p = .217$, Wald = 1.521) and asked questions in class or contributed to class discussion (Ask questions in class, CLQUEST; est. = $.017$, $p = .323$, Wald = 0.977).

The research results further revealed that the following two student engagement CCSSE individual variables from benchmark one (active and collaborative learning) were strongly predictive for total credit hours: worked with classmates outside of class to prepare assignments, with a Wald statistic value of 184.290 (OCCGRP; est. = $.248$, $p = .000$, Wald = 184.290) and made a class presentation, which had a similar Wald statistic value (CLPRESEN; est. = $.209$, $p = .000$, Wald = 182.247).

The pseudo R^2 measures were Nagelkerke = $.056$, Cox and Snell = $.054$, and McFadden = $.017$; the good-of-fit measures were Pearson $\chi^2(41,737, N = 18,321) = 46,107.917$, $p < .001$, and deviance $\chi^2(41,737, N = 18,321) = 34,371.268$, $p = 1.000$; and the model fitting information of the -2 log likelihood of intercept only = $42,992.274$ and the -2 log likelihood final = $41,967.981$, $\chi^2(8, N = 18,321) = 1,024.293$, $p < .001$.

Benchmark two. Student engagement CCSSE benchmark two, student effort, was based on eight individual variables. For reference, student engagement CCSSE benchmark two was not statistically significant for total credit hours (stueff_std; est. $< .001$, $p = .439$, Wald = 0.599).

Overall, for a student engagement CCSSE benchmark that was not statistically significant, all eight student engagement CCSSE individual variables from benchmark two (student effort) had statistically significant relationships with total credit hours (Table 4.24): use computer lab (Lab: computer, USECOMLB; est. = .205, $p < .001$; Wald = 201.509); prepared two or more drafts of a paper or assignment before turning it in ($2 \geq$ drafts, REWROPAP; est. = $-.184$, $p < .001$, Wald = 142.214); worked on a paper or project that required integrating ideas or information from various sources (Integrate sources, INTEGRAT; est. = .201, $p < .001$, Wald = 140.941); time preparing for class (studying, reading, writing, rehearsing, doing homework, or other activities related to your program) (Time preparing, ACADPRO1; est. = .158, $p < .001$, Wald = 131.352); peer or other tutoring (Use tutor, USETUTOR; est. = .117, $p < .001$, Wald = 40.891); number of books read on your own (not assigned) for personal enjoyment or academic enrichment (Read books, READOWN; est. = .065, $p < .001$, Wald = 22.877); come to class without complete reading or assignments (Unprepared, CLUNPREP; est. = .083, $p < .001$, Wald = 19.429); and use skill labs (writing, math, etc.) (Lab: writing and math, USELAB; est. = $-.039$, $p = .016$, Wald = 5.816). In addition, educational goals was statistically significant for total credit hours (sumq17code; est. = .075, $p < .001$, Wald = 132.178). Only two of the eight student engagement CCSSE individual variables from benchmark two (student effort) that had statistically significant relationships with total credit hours had negative estimates.

The research findings further revealed that the following four of eight student engagement CCSSE individual variables for benchmark two (student effort) were strongly predictive for total credit hours: use computer lab (USECOMLB; est. = .205, Wald = 201.509), prepared two or more drafts of a paper or assignment before turning it in (see

Table 4.24

Total Credit Hours by CCSSE Individual Variables from Benchmark Two, Student Effort (Research Question 5)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
Lab: computer (USECOMLB)	.205	.014	201.50	1	<.001
≥2 drafts (REWROPAP)	-.184	.015	142.214	1	<.001
Integrate sources (INTEGRAT)	.201	.017	140.941	1	<.001
Time preparing (ACADPRO1)	.158	.014	131.352	1	<.001
Use tutor (USETUTOR)	.117	.018	40.891	1	<.001
Read books (READOWN)	.065	.014	22.877	1	<.001
Unprepared (CLUNPREP)	.083	.019	19.429	1	<.001
Lab: writing, computer (USELAB)	-.039	.016	5.816	1	.016
Students educational goals (sumq17code)	.075	.006	132.178	1	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aTwo or more 2 drafts (REWROPAP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Prepared two or more drafts of a paper or assignment before turning it in: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4c); Integrate sources (INTEGRAT): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked on a paper or project that required integrating ideas or information from various sources: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4d); Unprepared (CLUNPREP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Come to class without complete reading or assignments: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4e); Read books (READOWN): During the current school year, about how much reading and writing have you done at this college? Number of books read on your own (not assigned) for personal enjoyment or academic enrichment: 1 = None; 2 = Between 1 and 4; 3 = Between 5 and 10; 4 = Between 11 and 20; 5 = More than 20 (CCSSE question 6b); Time preparing for class (ACADPRO1): Hours spend per week: About how many hours do you spend in a typical 7-day week doing each of the follow? Preparing for class (studying, reading, writing, rehearsing, doing homework, or other activities related to your program): 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30 hours; 5 = More than 30 hours (CCSSE question 10a); Use tutor (USETUTOR): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Peer or other tutoring: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13d1); Lab: writing, math (USELAB): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Skill labs (writing, math, etc.): 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13e1); Lab: computer (USECOMLB): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Computer lab: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13h1).

below for discussion of that variable) (REWROPAP; est. = $-.184$, Wald = 142.214), worked on a paper or project that required integrating ideas or information from various sources (INTEGRAT; est. = $.201$, $p < .001$, Wald = 140.941), and spent time per week preparing for class (studying, reading, writing, rehearsing, doing homework, or other activities related to your program) (ACADPRO1; est. = $.158$, $p < .001$, Wald = 131.352).

The pseudo R^2 measures were Nagelkerke = $.056$, Cox and Snell = $.054$, and McFadden = $.017$; the good-of-fit measures were Pearson $\chi^2(72, 201, N = 17,478) = 75,536.450$, $p < .001$, and deviance $\chi^2(72, 201, N = 17,478) = 50,755.307$, $p = 1.000$; and the model fitting information of the -2 log likelihood of intercept only = $54,410.207$ and the -2 log likelihood final = $53,444.443$, $\chi^2(9, N = 17,478) = 965.764$, $p < .001$.

Benchmark three. Student engagement CCSSE benchmark three, academic challenge, was based on the 10 individual variables. For reference, student engagement CCSSE benchmark three had a statistically significant relationship with total credit hours (acchall_std; est. = $.003$, $p < .001$, Wald = 27.174).

Nine of the 10 student engagement CCSSE individual variables from benchmark three (academic challenge) had statistically significant relationships with total credit hours (Table 4.25): number of assigned textbooks, manuals, books, or book-length packs of course readings (Read texts, READASGN; est. = $.107$, $p < .001$, Wald = 55.356); the extent to which your examinations during the current school year have challenged you to do your best work at this college (Exams, EXAMS; est. = $.091$, $p < .001$, Wald = 52.563); applying theories or concepts to practical problems or in new situations (Application, APPLYING; est. = $.101$, $p < .001$, Wald = 21.211); analyzing the basic elements of an idea, experience, or theory (Analysis, ANALYSE; est. = $.076$, $p < .001$, Wald = 12.481); the college encouraged

Table 4.25

Total Credit Hours by CCSSE Individual Variables from Benchmark Three, Academic Challenge (Research Question 5)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
Read texts (READASGN)	.107	.014	55.356	1	<.001
Exams (EXAMS)	.091	.013	52.563	1	<.001
Application (APPLYING)	.101	.022	21.481	1	<.001
Analysis (ANALYSE)	.076	.022	12.481	1	<.001
College > study (ENVSCHOL)	.055	.018	9.269	1	.002
Work hard (WORKHARD)	.047	.017	7.517	1	.006
Synthesis (SYNTHESZ)	-.057	.022	6.582	1	.010
Discernment (EVALUATE)	.049	.020	5.98	1	.014
Written papers (WRITEANY)	-.028	.014	4.282	1	.039
Perform new (PERFORM)	.008	.019	0.166	1	.684
Students educational goals (sumq17code)	.099	.007	231.191	1	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aWork hard (WORKHARD): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4p); Analysis (ANALYSE): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Analyzing the basic elements of an idea, experience, or theory: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5b); Synthesis (SYNTHESZ): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Synthesis and organizing ideas, information, or experience in new ways analyzing the basic elements of an idea, experience, or theory: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5c); Discernment (EVALUATE): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Making judgments about the value or soundness of information, arguments, or methods: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5d); Application (APPLYING): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Applying theories or concepts to practical problems or in new situations: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5e); Perform new skill (PERFORM): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Using information you have read or heard to perform a new skill: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5f); Read texts (READASGN): During the

Table 4.25 (continued)

current school year, about how much reading and writing have you done at this college? Number of assigned textbooks, manuals, books, or book-length packs of course readings: 1 = None; 2 = Between 1 and 4; 3 = Between 5 and 10; 4 = Between 11 and 20; 5 = More than 20 (CCSSE question 6a); Written papers (WRITEANY): During the current school year, about how much reading and writing have you done at this college? Number of written papers or reports of any length: 1 = None; 2 = Between 1 and 4; 3 = Between 5 and 10; 4 = Between 11 and 20; 5 = More than 20 (CCSSE question 6c); Exams (EXAMS): Mark the box that best represents the extent to which your examinations during the current school year have challenged you to do your best work at this college: 1 = Extremely easy; 2 = 2; 3 = 3; 4 = 4; 5 = 5; 6 = 6; 7 = Extremely challenging (CCSSE question 7); College encourages studying (ENVSCHOL): Amount of emphasis by college: To what extent does this college emphasize each of the following? Encouraging you to spend significant amounts of time studying: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9a).

you to spend significant amounts of time studying (College > study, ENVSCHOL; est. = .055, $p = .002$, Wald = 9.269); worked harder than you thought you could to meet an instructor's standards or expectations (Work hard, WORKHARD; est. = .047, $p = .006$, Wald = 7.517); synthesis and organizing ideas, information, or experience in new ways analyzing the basic elements of an idea, experience, or theory (Synthesis, SYNTHESZ; est. = -.057, $p = .010$, Wald = 6.582); making judgments about the value or soundness of information, arguments, or methods (Discernment, EVALUATE; est. = .049, $p = .014$, Wald = 5.998); and number of written papers or reports of any length (Written papers, WRITEANY, est. = -.028, $p = .039$, Wald = 4.282). In addition, educational goals was statistically significant for total credit hours (sumq17code; est. = .099, $p < .001$, Wald = 231.191). Only two of the nine student engagement CCSSE individual variables that were statistically significant, although with very small Wald statistic values, had negative estimates.

There was one individual variable from CCSSE benchmark three (academic challenge) that did not have a statistically significant relationships with grade point average:

use information you have read or heard to perform a new skill (Perform new, PERFORM; est. = .008, $p = .684$, Wald = 0.166).

Although nine of the 10 student engagement CCSSE individual variables were statistically significant for total credit hours, there were no student engagement CCSSE individual variables that were strongly predictive for total credit hours.

The pseudo R^2 measures were Nagelkerke = .037, Cox and Snell = .035, and McFadden = .011; the good-of-fit measures were Pearson $\chi^2(81,289, N = 17,509) = 83,422.975$, $p < .001$, and deviance $\chi^2(81,289, N = 17,509) = 55,099.424$, $p = 1.000$; and the model fitting information of the -2 log likelihood of intercept only = 56,819.065 and the -2 log likelihood final = 56,189.429, $\chi^2(11, N = 17,509) = 629.635$, $p < .001$.

Benchmark four. Student engagement CCSSE benchmark four, student–faculty interaction was based on six individual variables. For reference, student engagement CCSSE benchmark four had a statistically significant relationship with total credit hours (stufac_std; est. = .006, $p < .001$, Wald = 77.297).

Three of the six student engagement CCSSE individual variables from benchmark four (student–faculty interaction) had statistically significant relationships with total credit hours (Table 4.26): used e-mail to communicate with an instructor (Email to fac., EMAIL; est. = .201, $p < .001$, Wald = 166.941); talked about career plans with an instructor or advisor (Talk career plans, FACPLANS; est. = .212, $p < .001$, Wald = 137.539); and discussed ideas from your reading or classes with instructors outside of class (Fac. out of class, FACIDEAS; est. = .074, $p < .001$, Wald = 14.851). In addition, educational goals was statistically significant for total credit hours (sumq17code; est. = .086, $p < .001$, Wald = 187.240).

Table 4.26

Total Credit Hours by CCSSE Individual Variables from Benchmark Four, Student–Faculty Interaction (Research Question 5)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
Email to fac. (EMAIL)	.201	.016	166.941	1	<.001
Talk career plans (FACPLANS)	.212	.018	137.53	1	<.001
Fac. out of class (FACIDEAS)	.074	.019	14.851	1	<.001
Talk grade/work (FACGRADE)	–.038	.019	3.856	1	.050
Fac. non-class (FACOTH)	.038	.021	3.341	1	.068
Prompt fac. info. (FACFEED)	.005	.017	0.082	1	.774
Students educational goals (sumq17code)	.086	.006	187.240	1	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aEmail to faculty (EMAIL): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Used e-mail to communicate with an instructor: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4k); Talk grades/work with faculty (FACGRADE): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed grades or assignments with an instructor: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4l); Talk career plans (FACPLANS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Talked about career plans with an instructor or advisor: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4m); Talk class ideas to faculty outside of class (FACIDEAS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed ideas from your reading or classes with instructors outside of class: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4n); Prompt faculty feedback (FACFEED): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Received prompt feedback (written or oral) from instructors on your performance: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4o); Faculty non-class (FACOTH): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked with instructors on activities other than coursework: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4q).

The following three individual variables for CCSSE benchmark four (student–faculty interaction) did not have a statistically significant relationship with total credit hours:

discussed grades or assignments with an instructor outside of class (note the significance of .050 and the negative estimate) (Talk grade/work, FACGRADE; est. = –.038, $p = .050$, Wald

= 3.856); worked with instructors on activities other than coursework (Fac. non-class, FACOTH; est. = .038, $p = .068$, Wald = 3.341), and received prompt feedback (written or oral) from instructors on your performance (Prompt fac. info., FACFEED; est. = .005, $p = .774$, Wald = 0.082).

The two student engagement CCSSE individual variables from benchmark four (student–faculty interaction) that were strongly predictive for total credit hours were students who used e-mail to communicate with an instructor (EMAIL; est. = .201, $p < .001$, Wald = 166.941) and students who talked about career plans with an instructor or advisor (FACPLANS; est. = .212, $p < .001$, Wald = 137.539).

The pseudo R^2 measures were Nagelkerke = .047, Cox and Snell = .046, and McFadden = .014; the good-of-fit measures were Pearson $\chi^2(29,923, N = 18,110) = 34,159.194$, $p < .001$, and deviance $\chi^2(29,923, N = 18,110) = 26,412.028$, $p = 1.000$; and the model fitting information of the -2 log likelihood of intercept only = 35,662.904 and the -2 log likelihood final = 34,816.848, $\chi^2(7, N = 18,110) = 846.005$, $p < .001$.

Benchmark five. Student engagement CCSSE benchmark five, support for learning, was based on seven individual variables. For reference, student engagement CCSSE benchmark five had a statistically significant relationship with total credit hours (support_std; est. = $-.003$, $p < .001$, Wald = 18.664).

All seven student engagement CCSSE individual variables from benchmark five (support for learners) had statistically significant relationships with total credit hours (Table 4.27): use academic advising/planning (Academic advising, USEACAD; est. = .327, $p < .001$, Wald = 278.402); the college provides the support you need to thrive socially (Social

Table 4.27

Total Credit Hours by CCSSE Individual Variables from Benchmark Five, Support for Learning (Research Question 5)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
Academic advising (USEACAD)	.327	.020	278.402	1	<.001
Social support (ENVSOCAL)	-.094	.021	20.325	1	<.001
Financial support (FINSUPP)	-.050	.013	14.433	1	<.001
College help (ENVNACAD)	.056	.020	8.137	1	.004
College support (ENVSUPRT)	.050	.019	7.114	1	.008
Career counsel. (USECACOU)	.047	.019	6.019	1	.014
College > diversity (ENVDIVRS)	.032	.016	3.889	1	.049
Students educational goals (sumq17code)	.087	.006	191.211	1	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aCollege support (ENVSUPRT): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the support you need to help you succeed at this college: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9b); College encourages diversity (ENVDIVRS): Amount of emphasis by college: To what extent does this college emphasize each of the following? Encouraging contact among students from different economic, social, and racial or ethnic backgrounds: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9c); College help non-academics (ENVNACAD): Amount of emphasis by college: To what extent does this college emphasize each of the following? Helping you cope with your non-academic responsibilities (work, family, etc.): 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9d); Social support (ENVSOCAL): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the support you need to thrive socially: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9e); Financial support (FINSUPP): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the financial support you need to afford your education: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9f); Academic advising (USEACAD): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Academic advising/planning: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13a1); Career counseling (USECACOU): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Career counseling: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13b1).

support, ENVSOCAL; est. = $-.094$, $p < .001$, Wald = 20.325); the college provides the financial support you need to afford your education (Financial support, FINSUPP; est. = $-.050$, $p < .001$, Wald = 14.433); the college helps you cope with your non-academic responsibilities (work, family, etc.) (College help, ENVNACAD; est. = $.056$, $p = .004$, Wald = 8.137); the college provides the support you need to help you succeed at this college (College support, ENVSUPRT; est. = $.050$, $p = .008$, Wald = 7.114); use career counseling (Career counsel., USECACOU; est. = $.047$, $p = .014$, Wald = 6.019); and the college encouraging contact among students from different economic, social, and racial or ethnic backgrounds (note significance) (College > diversity, ENVDIVRS; est. = $.032$, $p = .049$, Wald = 3.889). In addition, educational goals was statistically significant for total credit hours (sumq17code; est. = $.087$, $p < .001$, Wald = 191.211). Only two of the seven student engagement CCSSE individual variables that had statistically significant relationships with total credit hours, although with small Wald statistic values, had negative estimates (note statistical significance of $p = .049$).

In addition, research findings revealed that there was only one individual variable from benchmark five (support for learning) that was strongly predictive for total credit hours: how often students used academic advising/planning (USEACAD; est. = $.327$, $p < .001$, Wald = 278.402). The remaining student engagement CCSSE individual variables for that benchmark had low Wald statistic values.

The pseudo R^2 measures were Nagelkerke = $.039$, Cox and Snell = $.038$, and McFadden = $.012$; the good-of-fit measures were Pearson $\chi^2(51,342, N = 18,053) = 55,570.806$, $p < .001$, and deviance $\chi^2(51,342, N = 18,053) = 40,298.445$, $p = 1.000$; and the

model fitting information of the -2 log likelihood of intercept only = 47,509.491 and the -2 log likelihood final = 46,816.166, $\chi^2(8, N = 18,053) = 693.324, p < .001$.

Total credit hours and student characteristics (research question 6). Research question 6: Do student characteristics predict total credit hours at Illinois community colleges?

The research findings indicated that several student characteristics had statistically significant relationships with total credit hours (Table 4.28): age (AGENEW; est. = .232, $p < .001$, Wald = 556.775), educational goals (sumq17code; est. = .143, $p < .001$, Wald = 409.822), enrollment (iweight; est. = $-.242$, $p < .001$, Wald = 264.051), orientation program (ORIEN; est. = .177, $p < .001$, Wald = 118.261), work for pay (PAYWORK, est. = .075, $p < .001$, Wald = 108.626), international student (INTERNAT; est. = .238, $p < .001$, Wald = 15.813), gender (SEX; est. = .111, $p < .001$, Wald = 15.563), Black race/ethnicity (est. = $-.296$, $p < .001$, Wald = 13.431), White race/ethnicity (est. = .172, $p = .019$, Wald = 5.505), public assistance (PUBASSIT; est. = $-.052$, $p = .022$, Wald = 5.254), children (HAVKID; est. = .088, $p = .032$, Wald = 4.622), and Asian race/ethnicity (est. = .201, $p = .032$, Wald = 4.593). Of note, the statistical significance for married was .051 (MARRY, est. = .080, $p = .051$, Wald = 3.823).

In addition to being married having a significance of .051, the following two student characteristics were not significant at the $p < .50$ level: English (ENGFIRST; est. = $-.069$, $p = .129$, Wald = 2.310) and dependents (CAREDEO1, est. = $-.011$, $p = .245$, Wald = 1.351). The following six student characteristics with statistically significant relationships had negative estimates with total credit hours: enrollment, public assistance; English, dependents, Black race/ethnicity, and Hispanic race/ethnicity. However, of those variables none, except for enrollment (iweight), had a large Wald statistic value.

Table 4.28

Total Credit Hours by Student Characteristics (Research Question 6)

CCSSE individual variables ^a	Est.	SE	Wald	df	p
Age (AGENEW)	.232	.010	556.755	1	<.001
Educ. Goals (sumq17code)	.143	.007	409.822	1	<.001
Enrollment (iweight)	-.242	.015	264.051	1	<.001
Orientation (ORIEN)	.177	.016	118.261	1	<.001
Work for Pay (PAYWORK)	.075	.007	108.626	1	<.001
Internat. (INTERNAT)	.238	.060	15.813	1	<.001
Sex (SEX)	.111	.028	15.563	1	<.001
Pub. Assist. (PUBASSIT)	-.052	.023	5.254	1	.022
Children (HAVKID)	.088	.041	4.622	1	.032
Married (MARRY)	.080	.041	3.828	1	.051
English (ENGFIRST)	-.069	.045	2.310	1	.129
Dependents (CAREDE01)	-.011	.009	1.351	1	.245
Race/Ethnicity					
Black	-.296	.081	13.431	1	<.001
White	.172	.073	5.505	1	.019
Asian	.201	.094	4.593	1	.032
Hispanic	-.127	.080	2.527	1	.112

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aGender (SEX): Your gender: 1 = Male; 2 = Female (CCSSE question 30); Age (AGENEW): Mark your age group: 1 = 18–19, 2 = 20–21, 3 = 22–24, 4 = 25–29, 5 = 30–39, 6 = 40–49, 7 = 50–64, 8 = 65+ (recoded, original CCSSE question 29); Race/Ethnicity (RERACE): What is your racial identification? (Mark all that apply): 1 = American Indian or other Native American; 2 = Asian, Asian American or Pacific Islander; 3 = Native Hawaiian; 4 = Black or African American; 5 = White, Non-Hispanic; 6 = Hispanic, Latino, Spanish; 7 = Other (CCSSE question 34); Enrollment (part time) (ENRLMENT): Thinking about this current academic term, how would you characterize your enrollment at this college?: 1 = Less than full time; 2 = full time (CCSSE question 2). The CCSSE weighted variable of Enrollment (part time) (iweight) was used to measure enrollment for inferential statistics; Married (MARRY): Are you married?: 1 = Yes; 2 = No (CCSSE question 31); Children (HAVKID): Do you have children who live with you?: 1 = Yes; 2 = No (CCSSE question 28); Dependents (CAREDE01): About how many hours do you spend in a typical 7-day week doing each of the following? Providing care for dependents living with your (parents, children, spouse, etc.): 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30 hours; 5 = More than 30 hours (CCSSE question 10d); Work for Pay (PAYWORK): About

Table 4.28 (continued)

how many hours do you spend in a typical 7-day week doing each of the following? Working for pay: 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30 hours; 5 = More than 30 hours (CCSSE question 10b); Public Assistance (PUBASSIT): Indicate which of the following are *sources* you use to pay your tuition at this college? (*Please respond to each item*): Public assistance: 1 = Not a source; 2 = Minor source; 3 = Major source (CCSSE question 18f); Orientation (ORIEN): Which of the following have you done, are you doing, or do you plan to do while attending this college: h. College orientation program or course: 1 = I Have Not Done, Nor Plan To Do; 2 = I Plan To Do; 3 = I Have Done (CCSSE question 8h); English (ENGFIRST): Is English your first native (first) language?: 1 = Yes; 2 = No (CCSSE question 32); International Students (INTERNAT): Are you an international student or foreign national?: 1 = Yes; 2 = No (CCSSE question 33).

As with student characteristics and grade point average, again, by far the most predictive student characteristic for total credit hours was student age (older students), with a very large Wald statistic value of 556.775 (AGENEW; est. = .232, $p < .001$, Wald = 556.775). In addition, educational goals was strongly predictive for total credit hours (sumq17code; est. = 143, $p = .000$, Wald = 409.822).

Another student characteristic that was strongly predictive for total credit hours was enrollment status (iweight, est. = $-.242$, $p < .001$, Wald = 264.051). The student characteristics of enrollment is a CCSSE composite variable for which a positive estimate indicated that students were enrolled part time and a negative estimate indicated that students were enrolled full time. However, that variable had a negative estimate (iweight; est. = $-.242$), indicating that student full-time enrollment was strongly predictive for more total credit hours (iweight; est. = $-.242$, $p < .001$, Wald = 264.051). An additional student characteristic that was strongly predictive for total credit hours was if a student participated in a college orientation program or course (ORIEN; est. = .177, $p < .001$, Wald = 118.261).

An interesting research finding was that the more hours students worked for pay per week was strongly predictive for increased total credit hours (PAYWORK; est. = .075, $p <$

.001, Wald = 108.626). The student characteristic of pay for work (PAYWORK) was coded so that no hours of work was coded as zero and higher values indicated increased hours worked for pay per week (see below for additional coding information). Therefore, the research finding for that variable indicated that increased hours worked for pay was predictive for increased total credit hours.

The pseudo R^2 measures were Nagelkerke = .077, Cox and Snell = .074, and McFadden = .023; the good-of-fit measures were Pearson $\chi^2(83,392, N = 17,753) = 85,114.040, p < .001$ and deviance $\chi^2(83,392, N = 17,753) = 55,872.411, p = 1.000$; and the model fitting information of the -2 log likelihood of intercept only = 58,002.134 and the -2 log likelihood final = 56,640.440, $\chi^2(18, N = 17,753) = 1,361.693, p < .001$.

Summary

The purpose of this study was to discover which student engagement variables and student characteristics predict student academic achievement as measured by grade point average and total credit hours. In this study, five standard composite student engagement CCSSE benchmarks, 38 student engagement CCSSE individual variables from those benchmarks, and student characteristics that were examined. Following an overview and parameters of the study, this chapter provided research findings from this study.

Four of the five student engagement CCSSE benchmarks (benchmarks one, three, four, and five) were statistically significant for both grade point average and total credit hours. However, only one of the benchmarks (benchmark one, active and collaborative learning) was strongly predictive for both grade point average and total credit hours.

Of the 38 student engagement CCSSE individual variables from benchmarks, 29 individual variables were statistically significant for grade point average and 30 individual

variables were statistically significant for total credit hours. However, only seven individual variables were strongly predictive for grade point average and only eight individual variables were strongly predictive for total credit hours. Overall then, 15 of the 38 student engagement CCSSE individual variables were strongly predictive for either grade point average or total credit hours. Yet, out of the 38 student engagement CCSSE individual variables, there was only one individual variable (time students prepared for class, ACADPRO1) that was strongly predictive for both grade point average and total credit hours.

In total, 11 of 15 student characteristics had a statistically significant relationship with grade point average and 12 of 16 student characteristics had a statistically significant relationship with total credit hours. However, only three student characteristics were strongly predictive for grade point average and only five student characteristics were strongly predictive for total credit hours. Again, there was only student characteristic (older students) that was strongly predictive for both grade point average and total credit hours. In addition, academic educational goals was, overall, strongly predictive for total credit hours.

Overall, although there were many student engagement variables and student characteristics that were statistically significant for measures of student academic achievement, only one student engagement CCSSE benchmark (benchmark one, active and collaborative learning), one student engagement CCSSE individual variable (time students prepared for class), and one student characteristics (older students) were strongly predictive for both grade point average and total credit hours.

The above research findings for this study illustrate the importance of (a) examining both student engagement benchmarks and individual variables from benchmarks, (b) examining both statistical significance and the strength of predictive relationships, and (c)

examining both outcome measures of student academic achievement (i.e., grade point average and total credit hours). Chapter 5 provides additional discussion of those issues and the research findings.

CHAPTER 5. DISCUSSION

I think, therefore, I am.

René Descartes

Overview

Discussions in this chapter focus primarily on student engagement variables and student characteristics that were strongly predictive for grade point average and total credit hours. Research findings for all the data were presented in chapter 4. Discussions in this chapter for the outcomes of grade points average and total credit hours are organized by student engagement CCSSE benchmarks, student engagement CCSSE individual variables from benchmarks, and student characteristics.

Following the discussions of research findings, there are more specific overall discussions of interpretation of research results, benchmarks and individual variables from benchmarks, and outcome measures. That information is followed by implications for policy, practice, and future research. The chapter concludes with a summary of the chapter, personal reflections, and a conclusion.

Discussion of Research Findings

This section highlights, compares, and discusses research findings for student engagement CCSSE benchmarks, student engagement CCSSE individual variables from benchmarks, and student characteristics as they relate to grade point average and total credit hours.

Student Engagement CCSSE Benchmarks (Research Questions 1 and 4)

The same four student engagement CCSSE benchmarks were statistically significant for both grade point average and total credit hours: benchmark one (active and collaborative learning), benchmark three (academic challenge), benchmark four (student–faculty

interaction), and benchmark five (support for learning), albeit with differences. Student engagement CCSSE benchmark two (student effort) was not statistically significant for either grade point average or total credit hours, whereas benchmark five (support for learning) was the only benchmark that had an inverse relationship for both grade point average and total credit hours (see Table 5.1).

Of the five CCSSE benchmarks, benchmark one (active and collaborative learning) was by far the most predictive for both grade point average and total credit hours. Student engagement CCSSE benchmark four (student–faculty interaction) had a positive estimate of .006 and a larger Wald statistic value of 77.297 for total credit hours, yet that benchmark had an inverse relationship with grade point average, albeit with a small negative estimate $-.001$ and a very small Wald statistic value of 4.477.

Table 5.1

Comparison of Student Engagement CCSSE Benchmarks by Grade Point Average and by Total Credit Hours (Research Questions 1 and 4)

Benchmark ^a (number)	Grade point average			Total credit hours		
	Est.	Wald	<i>p</i>	Est.	Wald	<i>p</i>
Learning (1)	.008	123.423	<.001	.009	179.756	<.001
Support (5)	–.005	82.325	<.001	–.003	18.664	<.001
Challenge (3)	.004	42.375	<.001	.003	27.174	<.001
Stud-Fac. (4)	.001	4.477	.034	.006	77.292	<.001
Effort (2)	.001	0.763	.382	.001	0.599	.439
Student educational goals (sumq17code)				.094	235.551	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aBenchmark one, active and collaborative learning (actcoll_std); Benchmark two, student effort (stueff_std); Benchmark three, academic challenge (acchall_std); Benchmark four, student–faculty interaction (stufac_std); and Benchmark five, support for learning (support_std).

Overall, the data clearly identified that student engagement CCSSE benchmark one (active and collaborative learning) was strongly predictive for both grade point average and total credit hours. Therefore, based on the strength of predictive relationships, the research findings suggest that student engagement CCSSE benchmark one (active and collaborative learning) should be supported to bolster both grade point average and total credit hours and that student engagement CCSSE benchmark four (student–faculty interaction) also should be encouraged for total credit hours.

The research findings raise the question of why student engagement CCSSE benchmark four (student–faculty interaction) is relatively strongly predictive for more total credit hours yet not more strongly predictive for higher grade point average. Likewise, why was benchmark three (academic challenge) and benchmark two (student effort) not more predictive for either grade point average or total credit hours? The findings also raise the question of why inverse relationships exist between some student engagement CCSSE benchmarks and outcome measures. Additional analyses of student engagement CCSSE individual variables from those overall benchmarks may shed light on those questions.

Student Engagement CCSSE Individual Variables from Benchmarks (Research Questions 2 and 5)

Student engagement CCSSE individual variables from benchmark one. The research findings revealed that student engagement CCSSE benchmark one, active and collaborative learning, was statically significant for both grade point average and total credit hours. In addition, all seven individual variables from that benchmark were robustly statistically significant for grade point average and five individual variables were robustly statistically significant for total credit hours (see Table 5.2).

Table 5.2

Comparison of Student Engagement CCSSE Individual Variables from Benchmark One (Active and Collaborative Learning) by Grade Point Average and Total Credit Hours (Research Questions 2 and 5)

CCSSE individual variables ^a from benchmark one (code)	Grade point average			Total credit hours		
	Est.	Wald	<i>p</i>	Est.	Wald	<i>p</i>
Ask questions in class (CLQUEST)	.456	707.697	<.001	.017	0.977	.323
Tutored/taught others (TUTOR)	.269	147.361	<.001	.075	11.897	.001
Discuss out of class (OOCIDEAS)	.092	36.46	<.001	.066	19.346	<.001
Make class presentat. (CLPRESEN)	-.091	34.416	<.001	.209	182.247	<.001
Others out of class (OCCGRP)	-.103	30.904	<.001	.248	184.290	<.001
Community project (COMMPROJ)	-.112	23.271	<.001	.096	17.513	<.001
Others in class (CLASSGRP)	-.052	9.662	.002	-.021	1.521	<.001
Students educational goals (sumq17code)				.086	187.821	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aAsk questions in class (CLQUEST): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Asked questions in class or contributed to class discussion: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4a); Make class presentation (CLPRESEN): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Made a class presentation: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4b); Others in class (CLASSGRP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked with other students on projects during class: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4f); Others out of class (OCCGRP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked with classmates outside of class to prepare assignments: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4g); Tutored/taught others (TUTOR): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Tutored or taught other students (paid or voluntary): 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4h); Community project (COMMPROJ): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Participated in a community-based project as part of a regular course: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4i); Discuss out of class (OOCIDEAS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed ideas from your reading or classes with others outside of class (students, family members, co-workers, etc.): 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4r).

Compared to the other benchmarks, student engagement CCSSE benchmark one (active and collaborative learning) had the strongest predictive relationship for both grade point average and total credit hours. Overall, from that benchmark, four student engagement CCSSE individual variables were strongly predictive for overall student academic achievement, although there was not a single student engagement CCSSE individual variable that was strongly predictive for both grade point average and total credit hours. These research findings may illustrate differences between grade point average and total credit hours.

The student engagement CCSSE individual variable, asked questions in class or contributed to class discussion, was extremely predictive for grade point average, although it was the only individual variable that was not statistically significant for total credit hours. The very robust Wald statistic value of 707.697 speaks to the strength of the predictive relationship between asking questions in class or contributing to class discussion and grade point average. Students who ask questions in class or contribute to class discussion may have educational content clarified and generally are considered to be more involved in active and collaborative learning, possibly resulting in higher grade point averages although not necessarily more total credit hours. The research findings would suggest that, to attain a higher grade point average, students should be encouraged to ask questions in class or contribute to class discussion.

The data also revealed that students tutoring or teaching other students was strongly predictive for higher grade point averages yet not strongly predictive for total credit hours, as evidenced by the low Wald statistic value of 11.897. As illustrated above, it is possible that students who tutor or teach others have higher grade point averages, yet that does not speak

to the “staying power” of the students reflected in total credit hours. The students who tutor or teach may be brilliant (as evidenced by their grade point average), yet for a variety of reasons, they may not be able to continue their education (as measured by total credit hours). In addition, it is generally accepted that one of the best ways to learn is to teach (tutor) others. Findings from the research would suggest that students tutoring or teaching others may support higher grade point averages.

The two student engagement CCSSE individual variables of worked with classmates outside of class to prepare assignments and made a class presentation were strongly, and about equally, predictive for total credit hours, yet both had an inverse relationship with grade point average. These research findings suggest that the activities of students meeting with classmates outside of class to prepare assignments and making class presentations are strongly predictive for more total credit hours and that to possibly increase total credit hours students should be encouraged to work with classmates outside of class to prepare assignments or make a class presentation. However, it is possible that these activities may be more common in upper level courses (additional research would be needed to explore that query), and therefore, older students (with more total credit hours) may be more likely to participate in those type of activities. It is surprising that these activities would have an inverse relationship with grade point average (albeit without a strong Wald statistic value), as it seems reasonable that the opposite would be true—that these activities would result in higher grade point averages.

Overall, the student engagement CCSSE individual variables from benchmark one (active and collaborative learning), asked questions in class or contributed to class discussion and tutored or taught other students (paid or volunteer), were strongly predictive for grade

point average, whereas the individual variables of made class presentations and worked with classmates outside of class to prepare assignments were strongly predictive for total credit hours. It is curious that the student engagement CCSSE individual variables asked questions in class and tutored or taught others (paid or voluntary) were so strongly predictive for grade point average, yet were virtually not predictive for total credit hours. Likewise, it is interesting that the student engagement individual variables of worked with others outside of class to prepare assignments and made a class presentation were so strongly predictive for total credit hours, yet were not strongly predictive for grade point average and, in fact, had a negative estimate.

Student engagement CCSSE individual variables from benchmark two. Student engagement CCSSE benchmark two, student effort, was the only student engagement CCSSE benchmark that was not statistically significant for either grade point average or total credit hours. Although the overall benchmark was not statistically significant, several of the individual variables from that benchmark were statistically significant and strongly predictive for grade point average or total credit hours.

Only one student engagement CCSSE individual variable for benchmark two (student effort), time students prepared for class, was strongly predictive for both grade point average and total credit hours (Table 5.3). In addition, it is surprising that in the entire study only one of the 38 student engagement variables was strongly predictive for both grade point average and total credit hours (time students prepared for class). Clearly the research findings strongly suggest that being prepared for class is important to student academic achievement.

A related student engagement CCSSE individual variable for benchmark two (student effort), not being unprepared for class, also was extremely predictive for grade point average

Table 5.3

Comparison of Student Engagement CCSSE Individual Variables from Benchmark Two (Student Effort) by Grade Point Average and Total Credit Hours (Research Questions 2 and 5)

CCSSE individual variables ^a from benchmark two (code)	Grade point average			Total credit hours		
	Est.	Wald	<i>p</i>	Est.	Wald	<i>p</i>
Unprepared (CLUNPREP)	-.485	633.719	<.001	.083	19.429	<.001
Time preparing (ACADPRO1)	.239	287.164	<.001	.158	131.352	<.001
Read books (READOWN)	.127	84.797	<.001	.065	22.877	<.001
Lab: writing, math (USELAB)	-.151	83.139	<.001	-.039	5.816	.016
Lab: computer (USECOMLB)	-.126	75.100	<.001	.205	201.509	<.001
≥2 drafts (REWROPAP)	-.067	18.558	<.001	.184	142.214	<.001
Integrate sources (INTEGRAT)	.025	2.213	.137	.201	140.941	<.001
Use tutor (USETUTOR)	-.024	1.717	.190	.117	40.891	<.001
Students educational goals (sumq17code)				.075	132.178	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aTwo or more 2 drafts (REWROPAP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Prepared two or more drafts of a paper or assignment before turning it in: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4c); Integrate sources (INTEGRAT): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked on a paper or project that required integrating ideas or information from various sources: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4d); Unprepared (CLUNPREP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Come to class without complete reading or assignments: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4e); Read books (READOWN): During the current school year, about how much reading and writing have you done at this college? Number of books read on your own (not assigned) for personal enjoyment or academic enrichment: 1 = None; 2 = Between 1 and 4; 3 = Between 5 and 10; 4 = Between 11 and 20; 5 = More than 20 (CCSSE question 6b); Time preparing for class (ACADPRO1): Hours spend per week: About how many hours do you spend in a typical 7-day week doing each of the follow? Preparing for class (studying, reading, writing, rehearsing, doing homework, or other activities related to your program): 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30 hours; 5 = More than 30 hours (CCSSE question 10a); Use tutor (USETUTOR): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Peer or other tutoring: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13d1); Lab: writing, math (USELAB): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Skill labs (writing, math, etc.): 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13e1); Lab: computer (USECOMLB): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Computer lab: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13h1).

(note Wald statistic value of 633.719), although that individual variable was not strongly predictive for total credit hours. These research findings would suggest that, conceptually (and perhaps pragmatically), there may be differences between being prepared for class and not being unprepared for class and that there are differences between the student academic achievement outcomes of grade point average and total credit hours. Based on those two similar student engagement CCSSE individual variables for benchmark two (student effort), the research findings clearly revealed an obvious connection and a strong link between students' preparedness and higher grade point averages, strongly suggesting that to bolster grade point average, students should be encouraged to be prepared for class (and not be unprepared). A key research finding in this section was a focus on the importance of preparedness as a predictor for grade point average.

Three of the four student engagement CCSSE individual variables for benchmark two (student effort) were strongly predictive for total credit hours, although none of those individual variables were strongly predictive for grade point average. As reported above, the individual variable for time students prepared for class was strongly predictive for both total credit hours and grade point average. In addition to time students prepared for class, two other student engagement CCSSE individual variables were strongly predictive for total credit hours (although not for grade point average): computer lab use and integrating ideas or information from various sources (Table 5.3). The research findings would suggest that to bolster total credit hours, students should be encouraged to use computer labs, integrate ideas or information from various sources into assignments, spend more time preparing for class, and not prepare two or more drafts of assignments. It is probable that students who engage in those activities or student efforts were more engaged in their courses, resulting in more total credit hours. These research findings again raise questions of why these three student

engagement CCSSE individual variables were strongly predictive for total credit hours yet not strongly predictive for higher grade point average.

There was a strongly predictive inverse relationship between how often students prepared two or more drafts of papers or assignment and total credit hours. That finding is interpreted as students who prepare two or more drafts of paper or assignment are less likely to have more total credit hours, which is an unexpected finding. Perhaps (although not likely) the time spent preparing two or more drafts of written work interfered with the completion of more total credit hours. Overall, the literature would not support that students write fewer drafts of assignments to increase total credit hours.

The research findings were clear about which student engagement CCSSE individual variables for benchmark two (student effort) were strongly predictive for grade point average. The individual variables of not being unprepared for class and the amount of time students take to prepare for class were strongly predictive for grade point average. With the findings revealing that student preparation is strongly related to grade point average, to bolster grade point average students should be encouraged to be prepared for class. These research findings would support the adage of “preparedness is all,” or as the Boy Scouts encourage, “Be prepared.”

The findings also indicated that two of the student engagement CCSSE individual variables from benchmark two (student effort), integrating ideas or information from various sources and the use of computer labs, was strongly predictive for total credit hours. Hence, those practices should be encouraged to possibly bolster total credit hours.

These research findings again illustrate the importance of examining both overall composite CCSSE benchmarks and student engagement CCSSE individual variables that

create those benchmarks. Illustrated by the research findings, the overall student engagement benchmark two (student effort) was not statistically significant for either grade point average or total credit hours, yet in combination, 14 of the 16 student engagement CCSSE individual variables from that benchmark were statistically significant for grade point average, total credit hours, or both.

Student engagement CCSSE individual variables from benchmark three. Student engagement CCSSE benchmark three, academic challenge, was statistically significant, although with low Wald statistic values for both grade point average (Wald = 42.375) and total credit hours (Wald = 27.174). Although the same nine of 10 student engagement CCSSE individual variables from that benchmark were statistically significant for both grade point average and credit hours, only one student engagement CCSSE individual variable, analyzing the basic element of an idea, experience, or theory, was strongly predictive for the student academic achievement of grade point average (Table 5.4). Yet, that particular variable was not strongly predictive for total credit hours. Therefore, the research findings suggest that students who analyze the basic elements of an idea, experience, or theory are more likely to have higher grade point averages. Based on those findings, it is reasonable to encourage students to analyze ideas, experiences, or theory to support higher grade point averages.

Some of the research findings illustrate the importance of examining both overall benchmarks and individuals variables. Although student engagement CCSSE benchmark three (academic challenge) overall was statistically significant for both grade point average and total credit hours and nine of the 10 student engagement CCSSE individual variables from that benchmark were statistically significant, only one individual variable from that benchmark was strongly predictive for student academic achievement.

Table 5.4

Comparison of Student Engagement CCSSE Individual Variables from Benchmark Three (Academic Challenge) by Grade Point Average and Total Credit Hours (Research Questions 2 and 5)

CCSSE individual variables ^a from benchmark three (code)	Grade point average			Total credit hours		
	Est.	Wald	<i>p</i>	Est.	Wald	<i>p</i>
Analysis (ANALYSE)	.238	117.238	<.001	.076	12.481	<.001
Application (APPLYING)	.139	39.697	<.001	.101	21.211	<.001
Exams (EXAMS)	-.079	38.498	<.001	.091	52.563	.030
Written papers (WRITEANY)	-.072	27.945	<.001	-.028	4.282	.014
Discernment (EVALUATE)	-.106	27.115	<.001	.049	5.998	.002
College>study (ENVSCHOL)	-.075	117.281	<.001	.055	9.269	.010
Synthesis (SYNTHESZ)	.093	17.169	<.001	-.057	6.582	.006
Work hard (WORKHARD)	.071	16.984	<.001	.047	7.517	<.001
Read texts (READASGN)	-.040	7.333	.007	.107	55.356	.684
Perform new (PERFORM)	-.011	0.308	.579	.008	0.166	<.001
Students educational goals (sumq17code)				.099	231.191	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aWork hard (WORKHARD): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked harder than you thought you could to meet an instructor's standards or expectations: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4p); Analysis (ANALYSE): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Analyzing the basic elements of an idea, experience, or theory: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5b); Synthesis (SYNTHESZ): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Synthesis and organizing ideas, information, or experience in new ways analyzing the basic elements of an idea, experience, or theory: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5c); Discernment (EVALUATE): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Making judgments about the value or soundness of information, arguments, or methods: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5d); Application (APPLYING): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Applying theories or concepts to practical problems or in new situations: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5e); Perform new skill (PERFORM): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Using

Table 5.4 (continued)

information you have read or heard to perform a new skill: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5f); Read texts (READASGN): During the current school year, about how much reading and writing have you done at this college? Number of assigned textbooks, manuals, books, or book-length packs of course readings: 1 = None; 2 = Between 1 and 4; 3 = Between 5 and 10; 4 = Between 11 and 20; 5 = More than 20 (CCSSE question 6a); Written papers (WRITEANY): During the current school year, about how much reading and writing have you done at this college? Number of written papers or reports of any length: 1 = None; 2 = Between 1 and 4; 3 = Between 5 and 10; 4 = Between 11 and 20; 5 = More than 20 (CCSSE question 6c); Exams (EXAMS): Mark the box that best represents the extent to which your examinations during the current school year have challenged you to do your best work at this college: 1 = Extremely easy; 2 = 2; 3 = 3; 4 = 4; 5 = 5; 6 = 6; 7 = Extremely challenging (CCSSE question 7); College encourages studying (ENVSCHOL): Amount of emphasis by college: To what extent does this college emphasize each of the following? Encouraging you to spend significant amounts of time studying: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9a).

Student engagement CCSSE individual variables from benchmark four. Student engagement CCSSE benchmark four, student–faculty interaction, had a statistically significant relationship with total credit hours and a statistically significant inverse relationship with total credit hours, although with a small estimate (–.001), a very small Wald statistic value (4.477), and a significance of .034. In addition, from benchmark four (student–faculty interaction) only two of six student individual variables were statistically significant for grade point average and four of six individual variables were statistically significant for total credit hours.

Similar to other research findings from this study, for benchmark four (student–faculty interaction) the student engagement CCSSE individual variables that were strongly predictive for grade point average were not the same individual variables that were strongly predictive for total credit hours. The research findings revealed clearly that only one student engagement CCSSE individual variable for benchmark four (student–faculty interaction), students received prompt feedback (written or oral) from instructors on their performance,

was strongly predictive for grade point average (all other variables had very small Wald statistic values; see Table 5.5), yet that variable was virtually nonpredictive for total credit hours. This would suggest that, in order to support student grade point averages, faculty should be encouraged to provide prompt feedback to students on their performance and students should be encouraged to request such feedback from instructors. The importance of communication between faculty and students is well supported by the literature.

Two student engagement CCSSE individual variables for benchmark four (student–faculty interaction) were strongly predictive for total credit hours: students who used e-mail to communicate with an instructor and when students talked about their career plans to an instructor or advisor. However, neither of these two variables were strongly predictive for grade point average. The data from the research would suggest that encouraging students to use e-mail to communicate with instructors may possibly support total credit hours. Supported by benchmark four (student–faculty interaction), students who e-mail instructors could increase student–faculty interaction, which could result in the positive student academic achievement of increased total credit hours.

Overall, for student engagement CCSSE individual variables from student engagement benchmark four (student–faculty interaction), both increased grade point average and total credit hours appeared to show a clear pattern of the importance of communication. More specifically, the research findings suggest the importance of communication received by students from their instructors, the importance of students communicating with instructors via e-mail, and the importance of communication with an instructor or advisor about career plans. The verbal or written communication from faculty to students and the communication from students (via e-mail) to instructors suggest the importance of two-way communication

Table 5.5

Comparison of Student Engagement CCSSE Individual Variables from Benchmark Four (Student–Faculty Interaction) by Grade Point Average and Total Credit Hours (Research Questions 2 and 5)

CCSSE individual variables ^a from benchmark four (code)	Grade point average			Total credit hours		
	Est.	Wald	<i>p</i>	Est.	Wald	<i>p</i>
Prompt fac. info. (FACFEED)	.322	357.239	<.001	.005	0.082	.774
Email to fac. (EMAIL)	−.046	8.568	.003	.201	166.941	<.001
Fac. out of class (FACIDEAS)	−.024	1.520	.218	.074	14.851	<.001
Fac. non-class (FACOTH)	−.024	1.363	.243	.038	3.341	.068
Talk career plans (FACPLANS)	−.017	0.913	.339	.212	137.539	<.001
Talk grade/work (FACGRADE)	−.013	0.443	.506	−.038	3.856	<.001
Students educational goals (sumq17code)				.086	187.240	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aE-mail to faculty (EMAIL): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Used e-mail to communicate with an instructor: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4k); Talk grades/work with faculty (FACGRADE): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed grades or assignments with an instructor: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4l); Talk career plans (FACPLANS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Talked about career plans with an instructor or advisor: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4m); Talk class ideas to faculty outside of class (FACIDEAS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Discussed ideas from your reading or classes with instructors outside of class: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4n); Prompt faculty feedback (FACFEED): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Received prompt feedback (written or oral) from instructors on your performance: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4o); Faculty non-class (FACOTH): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked with instructors on activities other than coursework: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4q).

as it impacts grade point average and total credit hours. In addition, it is reasonable (and the literature supports) that, for online classes for which students have no direct in-person contact with their instructor (or classmates), the importance of prompt and effective online/ e-mail communication is paramount.

Student engagement CCSSE individual variables from benchmark five. Student engagement CCSSE benchmark five, support for learning was the only benchmark that had an inverse relationship with both grade point average and total credit hours. In addition from that benchmark, five of seven individual variables were statistically significant for grade point average and all seven individual variables were statistically significant for total credit hours (although one variable had a significance of .049). The remaining student engagement CCSSE individual variables for that benchmark had low Wald statistic values.

As was the pattern for many student engagement CCSSE individual variables discussed previously, there were different individual variables that strongly predicted grade point average than strongly predicted total credit hours. The research findings revealed that one student engagement CCSSE individual variable for benchmark five (support for learning), the college's support for students to succeed at that college, was strongly predictive for grade point average, although not for total credit hours (Table 5.6). Conversely, one student engagement CCSSE individual variable for benchmark five (support for learning), students using academic advising/planning, was strongly predictive for total credit hours, although it was not strongly predictive for grade point average.

Although the student engagement CCSSE individual variable for the college's support for students to succeed at college was strongly predictive for grade point average, that variable is general, vague, and not well defined. It is reasonable to expect that colleges,

Table 5.6

Comparison of Student Engagement CCSSE Individual Variables from Benchmark Five (Support for Learning) by Grade Point Average and Total Credit Hours (Research Questions 2 and 5)

CCSSE individual variables ^a from benchmark five (code)	Grade point average			Total credit hours		
	Est.	Wald	<i>p</i>	Est.	Wald	<i>p</i>
College support (ENVSUPRT)	.250	174.700	<.001	.050	7.114	.008
Social support (ENVSOCAL)	-.153	53.077	<.001	-.094	20.325	<.001
Financial support (FINSUPP)	-.094	49.239	<.001	-.050	14.433	<.001
Career counseling (USECACOU)	-.071	13.488	<.001	.047	6.019	.014
Academic advising (USEACAD)	-.043	4.855	.028	.327	278.402	<.001
College > diversity (ENVDIRS)	.032	3.622	.057	.032	3.889	.049
College help (ENVNACAD)	.033	2.846	.092	.056	8.137	.004
Students educational goals (sumq17code)				.087	191.211	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aCollege support (ENVSUPRT): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the support you need to help you succeed at this college: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9b); College encourages diversity (ENVDIVRS): Amount of emphasis by college: To what extent does this college emphasize each of the following? Encouraging contact among students from different economic, social, and racial or ethnic backgrounds: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9c); College help non-academics (ENVNACAD): Amount of emphasis by college: To what extent does this college emphasize each of the following? Helping you cope with your non-academic responsibilities (work, family, etc.): 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9d); Social support (ENVSOCAL): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the support you need to thrive socially: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9e); Financial support (FINSUPP): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the financial support you need to afford your education: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9f); Academic advising (USEACAD): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Academic advising/planning: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13a1); Career counseling (USECACOU): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Career counseling: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13b1).

in general, should provide necessary support for students to achieve academic success. The vagueness of that variable does not provide a great deal of specificity or direction for action or change. In addition, as posited earlier, it is reasonable that older students or students further along in their academic career are more likely to seek academic advising/planning, which could account for the higher rates of total credit hours. Although it seems like common sense, the research findings support the practices of encouraging students to use academic advising/planning and for institutions of higher education to provide the support students need to help them succeed.

Comparison of Selected Student Engagement CCSSE Individual Variables from Benchmarks

In this section, select student engagement CCSSE individual variables from benchmarks that were strongly predictive for grade point average or were strongly predictive for total credit hours are compared. The comparisons illustrate how almost all strongly predictive individual variables from benchmarks were either strongly predictive for either grade point average or total credit hours but rarely both.

In this study, there were 38 student engagement CCSSE individual variables from five benchmarks. Of those 38 individual variables, there were only seven that were strongly predictive for grade point average and eight that were strongly predictive for total credit hours (Table 5.7). Only one of the 38 individual variables (time students prepared for class) was strongly predictive for both grade point average and total credit hours, and that research finding was from the one student engagement CCSSE benchmark (benchmark two, student effort) that was not strongly predictive (nor statistically significant) for either grade point average or total credit hours.

Table 5.7

Comparison of Select Student Engagement CCSSE Individual Variables by Grade Point Average and Total Credit Hours

CCSSE individual variables ^a	Grade point average			Total credit hours		
	Est.	Wald	<i>p</i>	Est.	Wald	<i>p</i>
Benchmark 1, active and collaborative learning						
Ask questions in class (CLQUEST)	.456	707.67	<.001	.017	0.977	.323
Tutored/taught others (TUTOR)	.269	147.361	<.001	.075	11.897	<.001
Make class presentation (CLPRESEN)	-.091	34.416	<.001	.209	182.247	<.001
Others out of class (OCCGRP)	-.103	30.904	<.001	.248	184.290	<.001
Benchmark 2, student effort						
Unprepared (CLUNPREP)	-.485	633.719	<.001	.083	19.429	<.001
Time preparing (ACADPRO1)	.239	287.164	<.001	.158	131.352	<.001
Lab: computer (USECOMLB)	-.126	75.100	<.001	.205	201.509	<.001
≥2 drafts (REWROPAP)	-.067	18.558	<.001	-.184	142.214	<.001
Integrate sources (INTEGRAT)	.025	2.213	.137	.201	140.941	<.001
Benchmark 3, academic challenge						
Analysis (ANALYSE)	.238	117.238	<.001	.076	12.481	<.001
Benchmark 4, student interaction						
Prompt fac. info. (FACFEED)	.322	357.239	<.001	.005	0.082	.774
Email to fac. (EMAIL)	-.046	8.568	.003	.201	166.941	<.001
Talk career plans (FACPLANS)	-.017	0.913	.339	.212	137.539	<.001
Benchmark 5, support for learning						
College support (ENVSUPRT)	.250	174.700	<.001	.050	7.114	.008
Academic advising (USEACAD)	-.043	4.855	.028	.327	278.402	<.001

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aAsk questions in class (CLQUEST): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Asked questions in class or contributed to class discussion: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4a); Make class presentation (CLPRESEN): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Made a class presentation: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4b); Others out of class (OCCGRP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked with classmates outside of class to prepare assignments:

Table 5.7 (continued)

1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4g); Tutored/taught others (TUTOR): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Tutored or taught other students (paid or voluntary): 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4h); Two or more 2 drafts (REWROPAP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Prepared two or more drafts of a paper or assignment before turning it in: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4c); Integrate sources (INTEGRAT): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Worked on a paper or project that required integrating ideas or information from various sources: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4d); Unprepared (CLUNPREP): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Come to class without complete reading or assignments: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4e); Time preparing for class (ACADPRO1): Hours spend per week: About how many hours do you spend in a typical 7-day week doing each of the follow? Preparing for class (studying, reading, writing, rehearsing, doing homework, or other activities related to your program): 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30 hours; 5 = More than 30 hours (CCSSE question 10a); Lab: computer (USECOMLB): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Computer lab: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13h1); Analysis (ANALYSE): Amount of emphasis in coursework: During the current school year, to what extent has your coursework at this college emphasized the following mental activities? Analyzing the basic elements of an idea, experience, or theory: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 5b); Email to faculty (EMAIL): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Used e-mail to communicate with an instructor: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4k); Talk career plans (FACPLANS): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Talked about career plans with an instructor or advisor: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4m); Prompt faculty feedback (FACFEED): Frequency: In your experience at this college during the current school year, about how often have you done each of the following? Received prompt feedback (written or oral) from instructors on your performance: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often (CCSSE question 4o); College support (ENVSUPRT): Amount of emphasis by college: To what extent does this college emphasize each of the following? Providing the support you need to help you succeed at this college: 1 = Very little; 2 = Some; 3 = Quite a bit; 4 = Very much (CCSSE question 9b); Academic advising (USEACAD): Frequency of use: Please answer HOW OFTEN you use the following services (paraphrased). Academic advising/planning: 0 = Do not know/not applicable; 1 = Rarely/never; 2 = Sometimes; 3 = Often (CCSSE question 13a1).

From student engagement CCSSE benchmark one (active and collaborative learning) four individual variables were strongly predictive for either grade point average *or* total credit hours (not both); from benchmark two (student effort), five individual variables were strongly predictive for grade point average or total credit hours and one was strongly predictive for *both*; from benchmark three (academic challenge), only one individual variable was strongly predictive for grade point average; from benchmark four (student–faculty interaction), three individual variables were strongly predictive for either grade point average *or* total credit hours (not both); and from benchmark five (support for learning), two individual variables were strongly predictive for either grade point average *or* total credit hours (not both). In addition, student academic programs were strongly predictive for all benchmarks for total credit hours (see above).

Overall the research findings clearly revealed that different student engagement CCSSE individual variables from benchmarks were strongly predictive for grade point average or total credit hours, but rarely of both (only one of 38 individual variables). See Table 5.7 for additional information.

Student Characteristics for Grade Point Average and Total Credit Hours (Research Questions 3 and 6)

Following a comparison of research findings for student engagement CCSSE individual variables from the five benchmarks, this section discusses the research findings from student characteristics. The study’s findings revealed that there were several student characteristics that were statistically significant for grade point average or total credit hours, yet few of those characteristics were strongly predictive for those outcomes (Table 5.8).

Overall, compared to the relationship between student characteristics and grade point average, there were (slightly) more and stronger predictive relationships between student

characteristics and total credit hours. As with student engagement CCSSE individual variables from benchmarks, there was only one student characteristic (older student age) that was strongly predictive for both grade point average and total credit hours. As illustrated in Table 5.8, clearly the student characteristic of student age was extremely predictive for both grade point average and increased total credit hours. Older students have had more time to accrue more total credit hours, they have had more time to learn information and knowledge, and they have had more time to mature, all of which could possibly result in higher grade point averages.

The rest of the student characteristics discussed below were strongly predictive for grade point average *or* total credit hours (not both). The study's findings illustrate the differences between the student academic achievement outcomes variables measured by grade point average and total credit hours, as well as the importance of measuring and differentiating between both outcome variables. See discussion of student engagement benchmarks and individual variables below for additional information.

The student characteristics of being male and not being married were about equally strongly predictive for grade point average, although they were not strongly predictive for total credit hours (they both had very low Wald statistic values for total credit hours). The research findings regarding gender were unexpected given that other literature and research findings have reported that female students are typically more likely than are male students to receive higher grades. Perhaps this study's findings reflect a pattern of male students who received higher grade point averages while they were in college, as being male was not strongly predictive for accumulating total credit hours. Therefore, it is possible that male students do well academically *while* they are in college, although for reasons beyond this

Table 5.8

*Comparison of Student Characteristics by Grade Point Average and by Total Credit Hours
(Research Questions 3 and 6)*

Student characteristics (variables ^a)	Grade point average			Total credit hours		
	Est.	Wald	<i>p</i>	Est.	Wald	<i>p</i>
Age (AGENEW)	.260	717.012	<.001	.232	556.755	<.001
Sex (SEX)	.295	107.119	<.001	.111	15.563	<.001
Married (MARRY)	-.407	94.572	<.001	.080	3.828	.051
Part-time enrollment (iweight)	-.082	30.900	<.001	-.242	264.051	<.001
Public assistance (PUBASSIT)	-.105	20.763	<.001	-.052	5.254	.022
Orient. Prog. (ORIEN)	-.057	11.918	.001	.177	118.261	<.001
English (ENGFIRST)	.129	11.918	.005	-.069	2.310	.129
Dependent care (CAREDE01)	.023	6.103	.013	-.011	1.351	.245
Work (PAYWORK)	-.012	2.779	.095	.075	108.626	<.001
International (INTERNAT)	-.077	1.583	.208	.238	15.813	<.001
Children (HAVKID)	.014	0.119	.730	.088	0.088	.032
Students educational goals (sumq17code)				.143	409.822	<.001
Race/ethnicity						
Black	-.562	47.394	<.001	-.296	13.431	<.001
White	.449	36.912	<.001	.172	5.505	.019
Asian	.465	23.565	<.001	.201	4.593	.032
Hispanic	-.086	1.124	.289	-.127	2.527	.112

Note. Abbreviations: Est. = estimate, Wald = Wald statistic.

^aGender (SEX): Your gender: 1 = Male; 2 = Female (CCSSE question 30); Age (AGENEW): Mark your age group: 1 = 18–19, 2 = 20–21, 3 = 22–24, 4 = 25–29, 5 = 30–39, 6 = 40–49, 7 = 50–64, 8 = 65+ (recoded, original CCSSE question 29); Race/Ethnicity (RERACE): What is your racial identification? (Mark all that apply): 1 = American Indian or other Native American; 2 = Asian, Asian American or Pacific Islander; 3 = Native Hawaiian; 4 = Black or African American; 5 = White, Non-Hispanic; 6 = Hispanic, Latino, Spanish; 7 = Other (CCSSE question 34); Enrollment (part time) (ENRLMENT): Thinking about this current academic term, how would you characterize your enrollment at this college?: 1 = Less than full time; 2 = full time (CCSSE question 2). The CCSSE weighted variable of Enrollment (part time) (iweight) was used to measure enrollment for inferential statistics.; Married (MARRY): Are you married?: 1 = Yes; 2 = No (CCSSE question 31); Children (HAVKID): Do you have children who live with you?: 1 = Yes; 2 = No (CCSSE question 28); Dependents (CAREDE01): About how many hours do you spend in a typical 7-day week doing each of the following? Providing care for dependents living with you (parents, children, spouse, etc.): 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30

Table 5.8 (continued)

hours; 5 = More than 30 hours (CCSSE question 10d); Work for Pay (PAYWORK): About how many hours do you spend in a typical 7-day week doing each of the following? Working for pay: 0 = None; 1 = 1–5 hours; 2 = 6–10 hours; 3 = 11–20 hours; 4 = 21–30 hours; 5 = More than 30 hours (CCSSE question 10b); Public Assistance (PUBASSIT): Indicate which of the following are *sources* you use to pay your tuition at this college? (*Please respond to each item*): Public assistance: 1 = Not a source; 2 = Minor source; 3 = Major source (CCSSE question 18f); Orientation (ORIEN): Which of the following have you done, are you doing, or do you plan to do while attending this college: h. College orientation program or course: 1 = i have not done, nor plan to do; 2 = I plan to do; 3 = I have done (CCSSE question 8h); English (ENGFIRST): Is English your first native (first) language?: 1 = Yes; 2 = No (CCSSE question 32); International Students (INTERNAT): Are you an international student or foreign national?: 1 = Yes; 2 = No (CCSSE question 33).

research, males may not be able to continue their education and accrue credit hours. The student characteristic of not being married being strongly predictive for higher grade point averages may be because perhaps married students are more mature, which could result in higher grade point averages, yet the responsibilities of marriage and other challenges (e.g., children) could limit accruing more total credit hours.

The student characteristics of academic education goals and full-time enrollment were very strongly predictive for total credit hours. It follows that academic education goals (associated with longer academic programs) would be strongly predictive for more total credit hours but not necessarily for higher grade point averages. In addition, compared to attending part time, it is reasonable that attending full time would be strongly predictive for more total credit hours but, again, not necessarily higher grade point averages. Therefore, to increase total credit hours it makes sense to encourage students to enroll full time.

According to the study's findings, the student characteristics of participating in a college orientation program or course and working for pay were similarly strongly predictive for total credit hours, although not for grade point average (see Table 5.8). It was interesting

that there was a strong predictive inverse relationship between student orientation program participation and grade point average yet a strongly predictive positive relationship between college orientation programs and total credit hours. The strongly predictive relationship between the student characteristic of orientation program participation and total credit hours may be explained by those students being more engaged in their college experience, that such an orientation program is required, or perhaps those students completed that orientation program toward the end of their community college career. In addition requiring a college orientation program (or any other courses) would increase total credit hours, although not necessarily higher grade point averages. However, it is reasonable that college orientation programs could, and perhaps should, help student's grade point averages (e.g., from course topics such as study skills, time management, effective use of institutional resources, etc.). The relationship found between college orientation program and total credit hours could reflect more of a correlational relationship rather than a practice of student engagement.

There was a strongly predictive relationship between students working for pay and more total credit hours but a statistically nonsignificant inverse relationship, with a very small Wald statistic value (2.779), with grade point average (Table 5.8). It would have been reasonable if the research findings identified a negative estimate for students who work and total credit hours, but that is not what the data revealed. Intuitively, and practically, it makes sense that students who work fewer or no hours per week would have more time to earn more total credit hours and more time for their studies, which may result in higher grade point averages. Perhaps students who are responsible and committed to working for pay more hours per week are the same students who are responsible and committed to student academic achievement measured by total credit hours, although it may not be reflected in

higher grade point averages. It also may be that students who work more hours per week are older. Nevertheless, it probably would not be wise to encourage students to work more hours per week in an effort to increase total credit hours.

There were varied research findings regarding student characteristics and the student academic achievements of grade point average and total credit hours. The research findings revealed that the student characteristic of age (being older), not being married, and being male were strongly predictive for higher grade point averages. However, the findings also revealed that the student characteristics of age (being older), academic education programs, full-time enrollment, orientation program participation, and working for pay were strongly predictive for more total credit hours. Overall, the research findings clearly indicate that a student being older is the only student characteristics in the study that was very strongly predictive for both grade point average and total credit hours, whereas different student characteristics were strongly predictive for grade point averages or total credit hours. Why some student characteristics are strongly predictive for grade point average yet not for total credit hours and why some are strongly predictive for total credit hours yet not of grade point averages are questions for future research.

Interpretation of Research Findings

In light of the above discussion of the study's findings, this section provides an interpretation of these findings.

Statistical Significance and Predictive Value

The research findings from this study illustrate the importance of examining both the statistical significance and the predictive strength of variables. This study provided many examples of predictive variables that were statistically significant for either grade point

average or total credit hours but were not strongly predictive (via the Wald statistic) of either outcome measure of grade point average or total credit hours. In addition, there were many cases of statistically significant variables (with small Wald statistic values), although there were no cases of strongly predictive variables (with large Wald statistic values) that were not statistically significant. In other words, a variable could be statistically significant yet not strongly predictive for an outcome measure (although all strongly predictive variables were statistically significant). Only examining the statistical significance of predictive variables would have provided a different view of the data than also examining the strength of predictive relationships. Therefore, this study shows that it is important to examine both statistical significance and the strength of predictive relationships. Findings from this study also provided many illustrations showing that statistical significance does not necessarily mean, or result in, practical significance.

In addition to examining the strength of the Wald statistic, it is essential to examine the estimate of the statistic and how the variables were coded. Depending on how predictive variables were coded, a negative estimate could indicate an inverse relationship (or not). Care needs to be taken in the proper interpretation of data. See the data analysis section in chapter 3 for additional information.

Benchmarks and Individual Variables from Benchmarks

As an extension of the importance of examining both statistical significance and the strength of predictive relationships, the research findings from this study also clearly illustrated the importance of examining both overall benchmarks and individual variables from those benchmarks. The findings from this study revealed that, overall, student engagement benchmarks one, three, four, and five were statistically significant for both grade

point average and total credit hours, yet according to the Wald statistic only 15 of the 38 the student engagement CCSSE individual variables from the benchmarks (39.4%) were strongly predictive for the outcome measures (even though the overall benchmarks were statistically significant). Benchmark two (student effort) was the only benchmark that was not statistically significant (or strongly predictive) for either grade point average or total credit hours, yet from that benchmark most of the student engagement CCSSE individual variables (14 of 16) were strongly predictive for grade point average, total credit hours, or both.

Furthermore, these research findings illustrate how a statistically not significant overall benchmark (benchmark two, student effort) can mask the findings for individual variables that are strongly predictive for outcome variables. Likewise, research findings from this study demonstrate how statistically significant overall benchmarks can obscure many individual variables that are not strongly predictive for outcome variables. For example, benchmark three (academic challenge) was statistically significant for both grade point average and total credit hours at the $p < .001$ level, yet of the 10 student engagement CCSSE individual variables from that benchmark, there were no individual variables that were strongly predictive for total credit hours and only one individual variable that was strongly predictive for grade point average. Without examining both benchmarks and individual variables there is a possibility of losing specificity and detail from those research findings. See the comparative student engagement CCSSE individual variables section above for examples and additional information.

The research findings revealed where overall benchmarks were statistically significant, although many individual variables from those benchmarks were not strongly predictive for the outcome variables, and where individual variables were strongly predictive

for outcome variables, yet the overall benchmark was not statistically significant (see below for additional information).

Outcome Measures

The research findings from this study revealed some interesting findings and patterns. Student academic achievement in this study was measured by grade point average and total credit hours. The data revealed similarities and differences (although mostly differences) between those two commonly used and accepted proxy measures.

The research findings clearly revealed that some student engagement variables and student characteristics were statistically significant and strongly predictive for only grade point average, some were statistically significant and strongly predictive for only total credit hours, and some (a few) were statistically significant and strongly predictive for both grade point average and total credit hours. The research findings illustrated similarities and differences between the measures of grade point average and total credit hours. Overall, the research findings revealed that there were (slightly) more and stronger predictors for total credit hours than for grade point average.

Although many student engagement CCSSE variables and student characteristics were statistically significant for grade point or total credit hours, only one of the five overall student engagement CCSSE benchmarks (one, active and collaborative learning) was strongly predictive for both grade point average and total credit hours. Likewise, only one student engagement CCSSE individual variable (from benchmark two, student effort), time students prepared for class, was strongly predictive for both grade point average and total credit hours. However, benchmark two was the only benchmark that was not statistically significant, or strongly predictive, for either grade point average or total credit hours. In

addition, there was only one student characteristic, age (older), that was strongly predictive for both grade point average and total credit hour. These research findings clearly revealed that strongly predictive student engagement variables and student characteristics were either strongly predictive for grade point average or total credit hours, but rarely both.

The similarities in the outcomes of grade point average and total credit hours include the practical reality that both are necessary for student academic achievement. For successful student academic achievement, students need both sufficiently high grade point averages (or they flunk out) and a sufficient number of total credit hours (or they do not graduate). However, overall differences between the outcomes of grade point average and total credit hours include the reality that students can have very high grade point averages yet not accrue many total credit hours, or they can accrue many total credit hours (e.g., a professional student) without having high grade point averages. For example a student could be a “straight A” student and yet not have enough total credit hours for a degree or certificate, or a student could have many total credit hours yet not have a sufficient grade point average needed for his or her academic goal (e.g., a nursing degree). The differences in those outcomes could be viewed as differences in quality (i.e., sufficient grade point average) and quantity (i.e., sufficient total credit hours). Student academic achievement requires both sufficient quality and quantity. The outcomes of grade point average and total credit hours can be viewed together or separately. As illustrated above, it is important to examine both grade point average and total credit hours—the interaction between those two is especially interesting.

Research with a sole focus on the outcome of grade point average can provide interesting research results. Likewise, research with a sole focus on the outcome of total

credit hours can provide interesting research findings. Research that examines both grade point average and total credit hours provides interesting research results. Ultimately, research should be driven and guided by the desired outcomes or objectives of the study.

Implications for Practice

Research should inform practice. Research findings from this study revealed that some student engagement variables were strongly predictive of student academic achievement measured by grade point average and total credit hours. Therefore, those variables should be examined for possible implementation in practice to increase student academic achievement. This section will provide information and practical suggestions for the possible implementation of such activities.

Accountability

Two overall important principles for implementing student engagement strategies are student accountability and early intervention. It is recommended that students be held accountable for their work (ideally starting at the beginning of a term). With the lack of early accountability procedures, some students have been known to procrastinate and put things off to the last possible moment. Many instructors have heard examples of the student expression, “I work better under pressure.” Although pressure can provide a powerful motivating force, it is quite possible (probable) that the quality of student work would be better if the student started the work sooner.

Early Intervention

In addition, it is important to begin student engagement practices as soon as possible. The beginning of a school term (especially for first-time college students) is a very important, and at times stressful and challenging, time for students. It is easy for some

students to get overwhelmed or “lost” and not become engaged at the beginning of a term (again especially for first-time students). Although it has been suggested that the first 2 weeks of classes are important for student engagement, the author would stress the importance of the first week of class. If students are not engaged after 2 weeks of class, they may fall so far behind academically that they may not be able to catch up.

More specifically, the author would recommend requiring faculty to provide student attendance information after the first 2 days of classes (e.g., the first Monday and Tuesday classes) and again at the end of the first week of classes. Support staff should immediately contact students who did not attend the first day or week of class. This is a large and challenging task, yet it is very important for student engagement. This supportive action necessitates the need for effective, proactive, and supportive student academic support services. Furthermore, colleges should have some sort of faculty friendly “early alert” system so faculty can (easily) notify support services about students who appear to be struggling academically.

As mentioned earlier, it is in the student’s and the institution’s best interest to retain students through student engagement. In addition it is easier (and more economical) to retain current students than constantly recruit new students.

Information

Information is power. Information can be persuasive. A suggestion as how to obtain “buy-in” for student engagement activities is to provide information from student engagement research findings to students, staff, faculty, administration and, ideally, the Board of Trustees. Information about which student engagement variables have been shown to be strongly predictive of student academic achievement could be disseminated in various

forums and ways such as convocations, all-college meetings, department meetings, a summary e-mail, etc. An example of the dissemination of this type of information is when the author of this dissertation presented similar student engagement CCSSE research findings to the John Wood Community College Board of Trustees, and his future plans to present the research findings to the faculty and hopefully have the forum available to the entire college, including students. Overall, the more faculty, administrators, and other personnel who are aware of effective student engagement strategies, the more they can promote those practices (especially faculty in their classes). As information is power, ideally presenting credible “facts” from research will create “buy-in” from the faculty, administration, and students. To build an argument, present the facts; provide credible information.

Active and Collaborative Learning

The research findings from this study strongly suggest that, overall, active and collaborative learning (from student engagement CCSSE benchmark one) should be supported in order to bolster both student grade point averages and total credit hours. That student engagement benchmark was strongly predictive for both of those outcome measures. See student engagement individual variables from that benchmark above for more specific information regarding active and collaborative learning.

Grade Point Average

Based on research findings of student engagement CCSSE individual variables from benchmarks, there are a number of student engagement activities that could be implemented to promote student academic achievement. Overall, the research findings from this study revealed the following student engagement variables were strongly predictive for grade point average: students asking questions in class or contributing to class discussion; tutoring or

teaching students (paid or unpaid); coming to class with completed readings or assignments; spending time to prepare for class (studying, reading, writing, rehearsing, doing homework, or other activities related to one's program); analyzing the basic elements of an idea, experience, or theory; receiving prompt feedback (written or oral) from one's instructors about performance; and the degree to which the college supports the student to succeed at the colleges. The research findings from this study clearly revealed that the above student engagement CCSSE individual variables from benchmarks were strongly predictive for grade point average and should be supported to possibly bolster grade point average.

Total Credit Hours

Similarly, a number of student engagement CCSSE individual variables from benchmarks were strongly predictive for total credit hours. Therefore, overall, the following student engagement activities should be examined to support total credit hours: students working with classmates outside of class to prepare assignments; making a class presentation, using a computer lab; working on a paper or project that requires integrating ideas or information from various sources; spending time to prepare for class (studying, reading, writing, rehearsing, doing homework, or other activities related to one's program); using e-mail to communicate with an instructor; talking about career plans with an instructor or advisor; and using academic advising/planning services. In light of the research findings from this study the above student engagement CCSSE individual variables from benchmarks could support total credit hours. However, the research finding of not preparing two or more drafts of a paper or project is not recommended for increasing total credit hours.

Time

Of the 38 student engagement CCSSE individual variables from benchmarks, only one individual variable was strongly predictive for both grade point average and total credit hours (time students prepared for class). Therefore, this important student engagement variable of time students prepare for class should be strongly encouraged and emphasized to support student academic achievement for both grade point average and total credit hours.

A possible outcome from this variable is to increase the amount of time students spend preparing for class. It makes intuitive sense that, overall, the more time students spend preparing for class is strongly predictive of student academic achievement (as with other areas of life). Historically, and at times today, it has been recommended that students should spend 3 hours a week preparing for class for every hour they spend in class per week. Therefore, students could expect to spend 9 hours a week preparing for a 3-hour class. By extension, a student enrolled in 12 credit hours could expect to spend 36 hours a week preparing for class. In addition, some classes may require more than 3 hours of preparation per credit hour (e.g., music classes). With the busy life of many community college students, it is quite possible that not all students are completing this 3:1 ratio of preparation time per credit hour.

Based on research findings, because of the importance of the student engagement variable of time spent preparing for class, this section will provide several specific suggestions to possibly increase the number of hours students prepare for class.

Study hall. As with many athletes who may be required to spend a certain amount of time in the library or other type of academic success/achievement center (without cell phones), and perhaps for students on academic probation or other students who are in some

sort of other supervised type programs (e.g., TRIO programs), identified students could be encouraged/required to spend a certain amount of time a week in such a supervised academic environment (perhaps with tutors). For other students who are unable to be physically present at a library or other such academic support center, perhaps some type of “virtual” study hall could be created for those students. A virtual study hall could be designed based on the current virtual office hours that are kept by some online and classroom instructors. Students could participate in some sort of “virtual study hall chatroom” with a tutor available as a resource. The amount of time students spend in that type of supportive resource could be monitored.

Learning communities and study groups. Learning communities and study groups can support student academic achievement and student engagement by increasing the time students spend preparing for class (and other activities). Institutions of higher education should be encouraged to establish such student groups. Those groups could be organized by discipline (e.g., engineer or medical students); by type of student group such as athletes, first-generation students, developmental education students; type of classes, etc.

Academic log/journal/calendar. The following is a simple yet effective means of helping students prepare for class. In addition, the following practice supports the principles of student accountability and responsibility. With direction from support staff, students could be encouraged/required to keep a log/journal/calendar of the amount of time they spend in class, the amount of time they spend preparing for class (e.g., studying, reading), etc. It would be beneficial to have the students examine their journals and meet with support staff on a regular basis (e.g., weekly) to review their journals and the amount of time they devote to their studies to address study strategy issues or other areas of need.

Monitor time spent in online classes or course support systems. Most course support systems record the amount of time students spend logged into the system. This is an easy way to monitor the amount of time students have logged into their course support material, although it should be noted that when a student is at home they can log into their course support system and “then do the dishes.” Many students have reported that they spend many hours on online, yet when examined, the amount of time the student logged into the system was minimal.

Labs. Research findings support that students should be encouraged/required to utilize labs such as writing labs, computer labs, music lab, science labs, other skill labs, etc. Sign-in sheets at the labs can record the student’s name and the amount of time spent at the labs (hopefully working on course material). More specifically, if students are required to write a research/term paper they could be encouraged/required to attend a writing lab. Again, sign-in procedures could be used to monitor the amount of time students spend in a writing lab.

First-year experience programs. First-year experience programs have been shown to support student engagement and student academic achievement. Therefore, it would be beneficial to have students participate in first-year experience programs. Those programs typically emphasize concepts such as the importance of time management (e.g., keep a time journal), study skills, use of academic resources, etc.

Faculty

The research findings clearly indicate that faculty play a vital role in student engagement and student academic achievement (see below for additional information). For example, a very strongly predictive student individual variable related to grade point average

is when students ask questions in class or participate in class discussion. Faculty are key to creating and maintaining an open and inviting class environment where students feel safe to ask questions and make comments. Therefore, faculty should be encouraged to create such an environment and encourage students to ask questions and make comments. Likewise, based on research findings, faculty should encourage students to make class presentations.

In addition, in regards to the important area of communication, research findings support that faculty should encourage students to contact faculty via e-mail; furthermore, faculty should be strongly encouraged to promptly respond to student communications—both of which practices have been shown to be strongly predictive of student academic achievement. Research findings also suggest that faculty should be encouraged to have students talk to faculty or an advisor about career plans. Finally, based on research findings, faculty should encourage students to integrate ideas and information from various sources for a paper or project and for students to analyze the basic elements of an idea, experience, or theory. With the encouragement and support of the faculty, all of the practices described above could be implemented. As mentioned earlier, reminders and encouragement to faculty to support student engagement activities could be in the form of convocations, all-college meetings, department meetings, workshops, e-mails, etc.

Out-of-Class Activities

In regards to student engagement activities that occur out of the class that have been shown to be strongly predictive of student academic achievement, students should be encouraged to tutor or teach others. Many higher education institutions have peer tutoring programs. Such peer tutors can greatly benefit the student providing the tutoring and the student receiving the tutoring. Institutions of higher education should support such

programs. In addition, research findings suggest that students should be encouraged to use computer labs (and by extension other types of labs). Reliable and easily accessible labs should be made available to students. Finally, the findings from this research would suggest that students should be encouraged to meet with classmates outside of class to prepare assignments. As explained above, learning communities, study groups, and other student groups can bolster student academic achievement and student engagement.

Tutoring

Two additional suggestions to support student academic achievement is the use of mentors and electronic tutoring services. In addition to face-to-face tutors, a relative easy way to support student academic achievement is to use a respected and proven online tutorial service (especially for online classes where students do not have face-to-face contact with an instructor or other students). Those tutorial services contain many excellent features and are generally available 24 hours a day. Many students are comfortable with such “e-tutors” and other online support services.

Mentoring

In addition, the use of mentors to support student engagement and student academic achievement is strongly recommended. Although it is a daunting challenge to find and make arrangements for excellent and busy mentors to meet with students, the benefits could be life changing. To help this challenge, one mentor could meet with several students. Mentors have knowledge, information, and experience that could benefit students (and others). Furthermore, matching the interest of mentors of students benefits both the mentor and the students. Students in need of direction and information could greatly benefit from mentors.

Mentors can assist students academically, professionally, socially, and in many other ways. There is great benefit in mentoring.

Implications for Policy

The information in this section will provide suggestions for possible policy implementation for student engagement activities that have been shown to be strongly predictive of student academic achievement.

Faculty

From a policy perspective, the research findings strongly suggest the importance of an active and engaged faculty in any type of student engagement effort. Faculty are the interface with students. Faculty (usually) have face-to-face contact with students and spend many hours with students. Faculty are aware of what is occurring in their class and how students are doing academically (and often in other areas). For students, faculty is the face of the college. When students graduate they may more likely remember and appreciate outstanding faculty members than other school personnel (e.g., administrators). From the student's perspective, if all administrators were gone for a day the students may not even be aware of that fact, yet if the entire faculty were gone for a day, from the students' perspective the college would shut down. While staff, administrators, and other personnel are important to student engagement efforts, because of their direct contact and interaction with students, faculty are key to student engagement.

Policy Suggestions

Based on the information above, policy suggestions for improved student retention include directly involving faculty and other direct support staff, recommended (mandatory) student participation in first-year experience programs (including keeping track of time spent

preparing for class), learning communities or organized study groups, intrusive advising for all students, and more intrusive involvement and interactions (e.g., tutors and other support staff) for students on academic probation or other students at risk of failure, etc. (e.g., perhaps first generation students, TRIO students, athletes who spend a great of time devoted to their athletic activities, etc.).

In addition, colleges should be encouraged to provide a full range of academic support services such as wireless access to the Internet across campus; making space for learning communities and study groups in dormitories, classrooms, the library; etc. Likewise, students should have easy access to other reliable support services such as labs and space for learning communities and study groups.

An essential component of any successful student engagement program is the need for activities and services to be effectively and professionally planned and implemented. For example, well run first-year experience programs have been shown to be successful. Yet, if those (or other) programs are not well planned, organized, or implemented, students may not see their time spent in those programs as beneficial or well spent. First-year experience programs (especially if they are mandatory) and other student engagement activities need to provide needed and useful information for students that benefit students.

Additional Policy Suggestions

In addition to the information and suggestions provided by the author, Tinto (1987, 1993) provided further policy suggestions to support student engagement. Tinto's (1987) general policy suggestions include: (a) institutions should ensure that new students enter with or have the opportunity to acquire the skills needed for academic success; (b) institutions should reach out to make personal contact with students beyond the formal domains of

academic life; (c) institutional retention actions should be systematic in character; (d) institutions should start as early as possible to retain students; (e) the primary commitment of institutions should be to their students; and (f) education, not retention, should be the goal of institutional retention programs.

Further general policy suggestions from Tinto (1993) include: (a) institutions should provide resources for program development and incentives for program participation that reach out to faculty and staff alike, (b) institutions should commit themselves to a long-term process of program development, (c) institutions should place ownership for institutional change in the hands of those across the campus who have to implement that change, (d) institutional actions should be coordinated in a collaborative fashion to insure a systematic, campus-wide approach to student retention, (e) institutions should act to insure that faculty and staff possesses the skills needed to assist and educate their students, (f) institutions should frontload their efforts on behalf of student retention, and (g) institutions and programs should continually assess their actions with an eye towards improvement.

Tinto's (1987, 1993) policy suggestions are sound. For additional information on policy recommendations see the work and policy recommendations of theorists such as Tinto, Astin and colleagues, and others whose work is cited in the literature review earlier.

Implications for Future Research

As discussed above, it is strongly recommended that future research examine both benchmarks and individual variables from benchmarks. There is a great deal of significant information that could be missed without examining individual variables. Although it is helpful to learn which overall benchmarks are associated with student success, there is more specific and pragmatic information that can be gleaned from individual variables.

Likewise, it also is essential that future research findings examine not only statistical significance but also other importance statistical indices and measures, such as the strength of predictive relationships (as in this research). Again, statistical significance does not necessarily indicate practical significance. Furthermore, it is recommended that future research conduct additional statistical analyses on individual variables that are strongly predictive for student success (e.g., study the interactions of strongly predictive student engagement variables). Potentially, a great deal of information can be gained from further analysis of the interaction of student engagement individual variables from benchmarks.

The research findings from this study illustrated the importance of determining and measuring specific outcome measures. For example, this research revealed that overall there were different findings for grade point average than for total credit hours. Additional outcomes of interest for future research may include retention rates or graduation rates (e.g., the relationship between student retention and student engagement and graduation rates). However, CCSSE does not use individual student identifiers in their data, so arrangements would need to be made to match CCSSE data with retention rates and graduation data.

Depending on the purpose and objectives of the research, future studies could focus on a variety of specific areas of interest. For example, data could be examined on a national level, at different types or locations of community colleges (or other types of institutions), or by specific student populations such as by gender, race/ethnicity, age (e.g., nontraditional students), financially challenged students, type of educational program (e.g., transfer or vocational education), developmental education students, first-generation students, etc.

Personal Reflection

Without research there is much guessing.

Randall Egdorf

I learned a great deal from conducting this research. As a professional educator in higher education for many years, with a passion for student academic achievement, I am excited about the possibility of educational research informing practice. This does not always occur in higher education, or in other areas. As noted above, without research there is much guessing. It has been said that without vision, people perish; perhaps in the scientific community, without research people guess.

Ideally in higher education, instructors teach, students learn, and institutions support learning. Effective and successful education often occurs at the intersection (at times the vortex) of engaged students, involved instructors, and concerned institutions. Anecdotally, it has been observed, and it makes sense intuitively, that student academic achievement success is often the result of engaged students, engaged instructors, and engaged institutions. Research findings from this study provide specific, practical, and applicable information that can be used to increase student academic achievement—a focus of higher education.

For example, the research findings from this study revealed that student engagement CCSSE benchmark one, active and collaborative learning was strongly predictive for both grade point average and total credit hours. As a result of that finding, active and collaborative learning activities should be encouraged and supported to help achieve those important outcomes.

The research findings illustrated that student engagement CCSSE individual variables from benchmarks were strongly predictive for student academic achievement. For example, the individual variable of the amount of time students spent preparing for class was strongly

predictive for both grade point average and total credit hours. Therefore, in an effort to support student academic achievement, although it is common sense, students should be encouraged to spend more time preparing for class. Educationally that is simple yet sound advice.

In addition, the following variables also were found to strongly support grade point average or total credit hours (select) and, thus, support student academic achievement: encouraging students to ask questions in class or contribute to class discussion; e-mailing instructors; talking to instructors or advisors about career plans; using computer labs; not being unprepared for class; working with classmates outside of class; integrating ideas or information from various sources for papers or projects; and analyzing the basic elements of an idea, experience, or theory; and tutor or teach other students. Many of these activities that support student academic achievement could easily be implemented and are certainly “doable” (e.g., e-mailing instructors, using computer labs, talking to instructors or advisors about career plans). Again, allow research to inform practice.

The overall research findings from this study revealed that some student engagement CCSSE benchmarks and individual variables from those benchmarks were strongly predictive of student academic achievement as measured by grade point average and total credit hours. Specific and practical findings from this research could be used to direct and inform decision making and policy to support student academic achievement.

The goal of education is to educate. The goal of research is to discover. Therefore, we must allow discoveries from educational research findings to inform higher education. Ideally educational decisions would be based on research rather than guesses, opinions, or other considerations or influences.

Research has shown that, overall, students are more likely to achieve student success when they are engaged, when instructors are engaged, and when institutions are engaged. Research findings, such as those from this study, provide specific, practical, and applicable findings that can direct and support practices that are predictive of student academic achievement. As a researcher and as an educator concerned with student academic achievement, I strongly support the use of practices and activities that research has shown to be predictive of student academic achievement measured by grade point average and total credit hours.

Finally, as a researcher it is exciting to discover student engagement variables that have been shown to be predictive of student academic achievement. As an educator it is exciting to have the opportunity to implement practices and activities that are predictive of student academic achievement. There is wisdom in conducting educational research to discover variables that predict student academic achievement. There is even greater wisdom in implementing those findings. The goal of higher education is to educate students. Research findings from studies such as this can help achieve that goal.

Summary

This chapter provided a discussion of research findings for student engagement CCSSE benchmarks, the student engagement CCSSE individual variables from those benchmarks, and student characteristics of student academic achievement measured by grade point average and total credit hours. That was followed by specific interpretation of research findings, benchmarks and individual variables from benchmarks, and outcome measures. Next were discussions of the implications for practice, policy, future research, as well as a personal reflections statement, a summary, and a conclusion.

Conclusion

The intent of this research was simple, direct, and straightforward. The purpose of this study was to determine which student engagement variables and student characteristics predict student academic achievement as measured by grade point average and total credit hours. The research findings clearly revealed that student engagement variables and students characteristics strongly predicted grade point average and total credit hours.

The research findings revealed that student engagement CCSSE benchmark one, active and collaborative learning, was strongly predictive for both grade point average and total credit hours. From the five overall CCSSE benchmarks, seven individual student engagement CCSSE variables were strongly predictive for grade point average and nine individual variables were strongly predictive for total credit hours. Of the 38 student engagement individual variables, only one variable (time student prepared for class) was strongly predictive for both grade point average and total credit hours. Likewise, only one student characteristic was strongly predictive for both grade point average and total credit hours: students age (older students).

Overall, the research findings from this study revealed that student engagement variables were strongly predictive for student academic achievement as measured by grade point average and total credit hours. Therefore, it follows that those variables should be examined in an effort to support student academic achievement. Furthermore, the research findings illustrate the importance of examining both statistical significance and other statistical analyses, as well as the importance of examining both benchmarks and the individual variables from those benchmarks.

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APPENDIX A. COMMUNITY COLLEGE SURVEY OF STUDENT ENGAGEMENT

The Community College Student Report

Instructions: It is essential that you use a No. 2 pencil to complete this survey. Mark your answers as shown in the following example:  Correct Mark  Incorrect Marks

1. Did you begin college at this college or elsewhere? ☐ Started here ☐ Started elsewhere

2. Thinking about this current academic term, how would you characterize your enrollment at this college? ☐ Full-time ☐ Less than full-time

3. Have you taken this survey in another class this term? ☐ Yes ☐ No

4. In your experiences at this college during the current school year, about how often have you done each of the following?

	Very often	Often	Sometimes	Never
a. Asked questions in class or contributed to class discussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Made a class presentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Prepared two or more drafts of a paper or assignment before turning it in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Worked on a paper or project that required integrating ideas or information from various sources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Come to class without completing readings or assignments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Worked with other students on projects during class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Worked with classmates outside of class to prepare class assignments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Tutored or taught other students (paid or voluntary)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Participated in a community-based project as a part of a regular course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Used the Internet or instant messaging to work on an assignment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Used e-mail to communicate with an instructor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. Discussed grades or assignments with an instructor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m. Talked about career plans with an instructor or advisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n. Discussed ideas from your readings or classes with instructors outside of class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
o. Received prompt feedback (written or oral) from instructors on your performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
p. Worked harder than you thought you could to meet an instructor's standards or expectations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
q. Worked with instructors on activities other than coursework	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
r. Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
s. Had serious conversations with students of a different race or ethnicity other than your own	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
t. Had serious conversations with students who differ from you in terms of their religious beliefs, political opinions, or personal values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
u. Skipped class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. During the current school year, how much has your coursework at this college emphasized the following mental activities?

	Very much	Quite a bit	Some	Very little
a. Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Analyzing the basic elements of an idea, experience, or theory	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Synthesizing and organizing ideas, information, or experiences in new ways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Making judgments about the value or soundness of information, arguments, or methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Applying theories or concepts to practical problems or in new situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Using information you have read or heard to perform a new skill	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PLEASE DO NOT MARK IN THIS AREA



SERIAL #

6. During the current school year, about how much reading and writing have you done at this college?

	None	1 to 4	5 to 10	11 to 20	More than 20
a. Number of assigned textbooks, manuals, books, or book-length packs of course readings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Number of books read on your own (not assigned) for personal enjoyment or academic enrichment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Number of written papers or reports of any length	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Mark the response that best represents the extent to which your examinations during the current school year have challenged you to do your best work at this college.

Extremely challenging 7 6 5 4 3 2 1 Extremely easy

8. Which of the following have you done, are you doing, or do you plan to do while attending this college?

	I have done	I plan to do	I have not done nor plan to do
a. Internship, field experience, co-op experience, or clinical assignment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. English as a second language course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Developmental/remedial reading course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Developmental/remedial writing course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Developmental/remedial math course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Study skills course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Honors course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. College orientation program or course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Organized learning communities (linked courses/study groups led by faculty or counselors)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. How much does this college emphasize each of the following?

	Very much	Quite a bit	Some	Very little
a. Encouraging you to spend significant amounts of time studying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Providing the support you need to help you succeed at this college	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Encouraging contact among students from different economic, social, and racial or ethnic backgrounds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Helping you cope with your non-academic responsibilities (work, family, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Providing the support you need to thrive socially	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Providing the financial support you need to afford your education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Using computers in academic work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. About how many hours do you spend in a typical 7-day week doing each of the following?

	None	1 - 5	6 - 10	11 - 20	21 - 30	More than 30
a. Preparing for class (studying, reading, writing, rehearsing, doing homework, or other activities related to your program)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Working for pay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Participating in college-sponsored activities (organizations, campus publications, student government, intercollegiate or intramural sports, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Providing care for dependents living with you (parents, children, spouse, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Commuting to and from classes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Mark the number that best represents the quality of your relationships with people at this college.

Your relationship with:

a. Other Students

Friendly, supportive, sense of belonging ⑦ ⑥ ⑤ ④ ③ ② ① Unfriendly, unsupportive, sense of alienation

b. Instructors

Available, helpful, sympathetic ⑦ ⑥ ⑤ ④ ③ ② ① Unavailable, unhelpful, unsympathetic

c. Administrative Personnel & Offices

Helpful, considerate, flexible ⑦ ⑥ ⑤ ④ ③ ② ① Unhelpful, inconsiderate, rigid

12. How much has YOUR EXPERIENCE AT THIS COLLEGE contributed to your knowledge, skills, and personal development in the following areas?

	Very much	Quite a bit	Some	Very little
a. Acquiring a broad general education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Acquiring job or work-related knowledge and skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Writing clearly and effectively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Speaking clearly and effectively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Thinking critically and analytically	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Solving numerical problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Using computing and information technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Working effectively with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Learning effectively on your own	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Understanding yourself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Understanding people of other racial and ethnic backgrounds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. Developing a personal code of values and ethics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m. Contributing to the welfare of your community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n. Developing clearer career goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
o. Gaining information about career opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○

- [illegible]

- | Very likely | Likely | Some-
what
likely | Not
likely |
|-----------------------|-----------------------|-------------------------|-----------------------|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

- ☐ Extremely ☐ Somewhat
☐ Quite a bit ☐ Not very

- ☐ Extremely ☐ Somewhat
☐ Quite a bit ☐ Not very

- [illegible]

SERIAL # ○○○○○○○○○○○○○○○○○○○○☐

- | | Major source | Minor source | Not a source |
|---|-----------------------|-----------------------|-----------------------|
| 18. Indicate which of the following are <u>sources</u> you use to pay your tuition at this college? (Please respond to each item) | | | |
| a. My own income/savings | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b. Parent or spouse/significant other's income/savings | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c. Employer contributions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d. Grants and scholarships | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e. Student loans (bank, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f. Public assistance | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| | | | |
| 19. Since high school, which of the following types of schools have you attended other than the one you are now attending? (Please mark all that apply) | | | |
| <input type="checkbox"/> Proprietary (private) school or training program | | | |
| <input type="checkbox"/> Public vocational-technical school | | | |
| <input type="checkbox"/> Another community or technical college | | | |
| <input type="checkbox"/> 4-year college or university | | | |
| <input type="checkbox"/> None | | | |
| | | | |
| 20. When do you plan to take classes <u>at this college</u> again? | | | |
| <input type="checkbox"/> I will accomplish my goal(s) during this term and will not be returning | | | |
| <input type="checkbox"/> I have no current plan to return | | | |
| <input type="checkbox"/> Within the next 12 months | | | |
| <input type="checkbox"/> Uncertain | | | |
| | | | |
| 21. <u>At this college</u> , in what range is your overall college grade average? | | | |
| <input type="checkbox"/> A | | | |
| <input type="checkbox"/> A- to B+ | | | |
| <input type="checkbox"/> B | | | |
| <input type="checkbox"/> B- to C+ | | | |
| <input type="checkbox"/> C | | | |
| <input type="checkbox"/> C- or lower | | | |
| <input type="checkbox"/> Do not have a GPA at this school | | | |
| <input type="checkbox"/> Pass/fail classes only | | | |
| | | | |
| 22. When do you most frequently take classes <u>at this college</u> ? (Mark one only) | | | |
| <input type="radio"/> Day classes (morning or afternoon) | | | |
| <input type="radio"/> Evening classes | | | |
| <input type="radio"/> Weekend classes | | | |
| | | | |
| 23. How many TOTAL credit hours have you earned <u>at this college</u> , not counting the courses you are currently taking this term? | | | |
| <input type="radio"/> None | | | |
| <input type="radio"/> 1-14 credits | | | |
| <input type="radio"/> 15-29 credits | | | |
| <input type="radio"/> 30-44 credits | | | |
| <input type="radio"/> 45-60 credits | | | |
| <input type="radio"/> Over 60 credits | | | |

24. At what other types of institutions are you taking classes this term? (Please mark all that apply)

- ☐ None
- ☐ High school
- ☐ Vocational/technical school
- ☐ Another community or technical college
- ☐ 4-year college/university
- ☐ Other

25. How many classes are you *presently* taking at OTHER institutions?

- ☐ None
- ☐ 1 class
- ☐ 2 classes
- ☐ 3 classes
- ☐ 4 classes or more

26. Would you recommend this college to a friend or family member?

- ☐ Yes ☐ No

27. How would you evaluate your entire educational experience at this college?

- ☐ Excellent
- ☐ Good
- ☐ Fair
- ☐ Poor

28. Do you have children who live with you?

- ☐ Yes ☐ No

29. Mark your age group.

- ☐ Under 18
- ☐ 18 to 19
- ☐ 20 to 21
- ☐ 22 to 24
- ☐ 25 to 29
- ☐ 30 to 39
- ☐ 40 to 49
- ☐ 50 to 64
- ☐ 65+

30. Your sex:

- ☐ Male ☐ Female

31. Are you married?

- ☐ Yes ☐ No

32. Is English your native (first) language?

- ☐ Yes ☐ No

33. Are you an international student or foreign national?

- ☐ Yes ☐ No

34. What is your racial identification? (Mark only one)

- ☐ American Indian or other Native American
☐ Asian, Asian American or Pacific Islander
☐ Native Hawaiian
☐ Black or African American, Non-Hispanic
☐ White, Non-Hispanic
☐ Hispanic, Latino, Spanish
☐ Other

35. What is the highest academic credential you have earned?

- ☐ None
☐ High school diploma or GED
☐ Vocational/technical certificate
☐ Associate degree
☐ Bachelor's degree
☐ Master's/doctoral/professional degree

36. What is the highest level of education obtained by your:

	Father	Mother
a. Not a high school graduate	<input type="radio"/>	<input type="radio"/>
b. High school diploma or GED	<input type="radio"/>	<input type="radio"/>
c. Some college, did not complete degree	<input type="radio"/>	<input type="radio"/>
d. Associate degree	<input type="radio"/>	<input type="radio"/>
e. Bachelor's degree	<input type="radio"/>	<input type="radio"/>
f. Master's degree/1st professional	<input type="radio"/>	<input type="radio"/>
g. Doctorate degree	<input type="radio"/>	<input type="radio"/>
h. Unknown	<input type="radio"/>	<input type="radio"/>

37. Using the list provided, please fill in the bubbles that correspond to the code indicating your program or major. Using the first column, indicate the first number in the program code, using the second column, indicate the second number in the program code.

<input type="text"/>	<input type="text"/>
0	0
1	1
2	2
3	3
4	
5	
6	
7	
8	
9	

APPENDIX B. IOWA STATE UNIVERSITY RESEARCH APPROVAL

From: Agnitsch, Kerry A [ORR] [kagnitsc@iastate.edu]
Sent: Thursday, June 23, 2011 12:36 PM
To: Randall Egdorf; 'kagnitsc@iastate.edu'
Cc: 'Crumpley, Jeff F'; 'Ebbers, Larry H [EL PS]'; 'Laanan, Frankie S [EL PS]'; 'Shelley, Mack C [STAT]'; 'Weiland, Judy R [EL PS]'; Josh Welker; Bappe, Roxanne L [ORR]
Subject: RE: Humans Subjects, IRB

Hello Randall,

It was nice talking with you earlier today. Regarding your question, you are correct—obtaining de-identified data that were collected for purposes other than the current study (i.e., for institutional purposes, in your case) does not constitute research that involves human subjects (as federally defined). This is because you will not interact or intervene with subjects, and the data are not both private and identifiable.

Because your project does not involve human subjects, IRB approval is not required and you may proceed with analysis of the data.

Best of luck with your dissertation research.

Best,

Kerry Agnitsch, Ph.D.

Co-Chair, Institutional Review Board

Office for Responsible Research

Iowa State University

1138 D Pearson

Ames, IA 50011

515.294.4271

From: Randall Egdorf [mailto:REgdorf@JWCC.EDU]
Sent: Thursday, June 23, 2011 12:22 PM
To: 'kagnitsc@iastate.edu'
Cc: 'Crumpley, Jeff F'; 'Ebbers, Larry H [EL PS]'; 'Laanan, Frankie S [EL PS]'; 'Shelley, Mack C [STAT]'; 'Weiland, Judy R [EL PS]'; Josh Welker
Subject: Humans Subjects, IRB

I am a Ph. D. candidate in the Iowa State University, College of Human Sciences, Department of Education Leadership and Policy Studies. My co-dissertation chairs are Dr. Larry H. Ebbers and Dr. Frankie S. Laanan. Josh Welker is the Institutional Researcher at John Wood Community College.

For my dissertation, I plan to analyze data from the Community College Survey of Student Engagement (CCSSE).

The CCSSE data I plan to review has no identifying information. There are no codes that can reveal individual or institutional information. The data is anonymous. See note below from Jeff Crumpley at CCSSE. I have received approval from CCSSE to use this data.

It is my understanding that anonymous non-identifiable data does not need to be approved by the Human Subjects Institutional Review Board (IRB) process.

Please confirm that this data does not need Human Subjects IRB approval.

Thank you.

Randall Egdorf

Department Chair and Assistant Professor of Social/Behavioral Sciences
 (Psychology, Sociology, History, and Political Science)

Vice President of Faculty Senate
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Vita est quid id facias. "Life is what you make it."