RETAINING STUDENTS IN COMMUNITY COLLEGE CLASSROOMS:
A STUDENT SUCCESS MODEL

by

Carmen Ray Allen

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Has been approved

May 2017

APPROVED:

Leonard Johnson, PhD
Committee Chair

William Potter, PhD
Committee Member

Talia Koronkiewicz, EdD
Committee Member

Dissertation Committee

ACCEPTED:

Roberta C. Teahen, PhD, Director
Community College Leadership Program

ABSTRACT

For the last decade, community colleges have been challenged by declining enrollment, reduced financial resources, and increased demand for accountability at national, state, and local levels, resulting in a need for enhanced focus on student retention and success. Community colleges are also challenged by competition at national and global levels as they struggle to meet the evolving demands of communities transformed by the information age.

The retention research provided in this dissertation identifies abundant opportunities for higher education stakeholders to be more proactive in assisting students to complete their college goals. Students make critical decisions about their classes based on interactions with staff, faculty, and technologies being used. Learning expectations are evolving, along with the technologies used by current and future college students.

With a stronger focus on the classroom, where students spend most of their educational journey, student success is more likely. Meaningful, thoughtful, and systematic solutions won't happen quickly, but community colleges that focus more closely on the student experience and overall success more likely will thrive.

This dissertation provides practical retention and success solutions targeting enhanced use of student data, heightened student engagement, and classroom performance monitoring. Specific technological and innovative strategies are also provided. The work concludes with an implementation model and recommendations for successful implementation.

DEDICATION

To my father, Rev. Ray Allen, who piqued my interest in technology as a child and modeled his generosity and service to others throughout his lifetime. Your love and laughter are greatly missed, and your memories live on each day.

To my mother, Joyce Allen, a devoted educator of community college students for many years. Your knowledge, insight, and wisdom are reflected in this writing. You bring so much love and joy to my life. Without you to show me the way, this work would never have happened.

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CHAPTER 1: INTRODUCTION

COMMUNITY COLLEGE CHALLENGES

When community colleges were established, they developed a reputation for strategically anticipating and responding to local, regional, state, and national needs. Their mission, vision, and values targeted three major areas—two-year workforce degrees, two-year transfer degrees, and community service. By offering two-year credentials, community colleges ventured to compete directly with well-established institutions of higher education. As they forged forward into new territory and introduced new technologies, they established themselves as leaders and sustainers of creativity. Using current terminology to identify a radical departure from accepted business methods, "Community colleges were themselves a bona fide 'disruptive innovation' on the higher education landscape" (Phelan, 2016, p. 6).

Despite this groundbreaking effort, community college successes were never guaranteed. Today, their current practices more closely match those of traditional universities challenged by forces external to their control. The public is much more demanding about accountability from accrediting agencies that expect tangible reporting about student success measurements. Many states now review the retention rates of public institutions and may eventually tie resource allocations to those indicators.

According to Phelan (2016), "Without question, community colleges today are faced with intensifying expectations set against stationary or declining financial resources with which to accomplish all that is being asked of them" (p. 7). Declining financial resources require community colleges to refocus strategic plans that require doing more with less. They are further challenged by competition at the national and global level as they struggle to meet the evolving demands of communities being transformed by the information age.

Declining enrollment, one of the most significant external challenges facing community colleges, is a critical concern. After growing at a rate of roughly 45% between 1997 and 2011, America's student population is projected to grow by only 13.9% over the coming decade (Tomar, n.d.). Since 2010, when college campuses across America enrolled over 21 million students, attendance has declined every year (National Center for Education Statistics [NCES], 2015). In 2015, undergraduate and graduate enrollment decreased to 19.1 million (U.S. Census Bureau, 2016). Community colleges, known for their affordability and accessibility, are experiencing some of the largest declines as evidenced by enrollment falling by over 820,000 students since 2010 (Long, 2016).

Several explanations for enrollment declines lie beyond institutional control. Vedder (2012) acknowledges that a decline in the freshman population and a strong economy are contributors, but other factors such as restrictive eligibility requirements for financial assistance are also significant. Concerns about lower returns on college investments are also to blame as estimates indicate that "as many as 53% of recent college graduates are either unemployed or have relatively low paying, low skilled jobs" (Vedder, 2012, para. 11).

Perhaps the most significant factor contributing to decreased enrollment is actually within the control of higher education—skyrocketing college expenses. Schoen (2015) has reported that the median household needs to work for almost a year to pay tuition expenses at some prestigious colleges. According to The College Board (2016), "Between 2011-12 and 2016-17, published tuition and fee prices rose by 9% in the public four-year sector, by 11% at public two-year colleges, and by 13% at private nonprofit four-year institutions, after adjusting for inflation" (para. 1).

Increased college expenses contribute to a much larger issue gaining the attention of national media outlets. To pay for college expenses, "millions of students and families every year are forced deeper into debt to make up the difference. An estimated $100 billion a year is borrowed through a cottage industry of private and publicly-funded loan programs" (Schoen, 2015, para. 12). While this rise in debt may be more typical of students attending private institutions or four-year universities, it is not necessarily the case for students who attend community colleges with lower tuition: "The public has become all too aware of the term 'bubble' to describe an asset that is irrationally and artificially overvalued and cannot be sustained" (Cronin & Horton, 2009, para. 1).

> According to the National Center for Public Policy and Higher Education, over the past 25 years, average college tuition and fees have risen by 440%—more than four times the rate of inflation and almost twice the rate of medical care. Patrick M. Callan, the center's president, has warned that low-income students will find college unaffordable. (Cronin & Horton, 2009)

Regardless, rising debt is well publicized and can deter enrollment from any college or university. By promoting their affordability, community colleges have a distinct competitive advantage.

Higher Education institutions are also guilty of implementing short term, counter-productive solutions to address issues directly related to increased college expenses. To make up for reduced tuition revenue attributed to reduced enrollment, the administrative knee-jerk response is to raise tuition further which serves to negatively impact enrollment even more. This continuing cyclical pattern could have devastating results unless higher education implements other alternatives.

Agile community colleges that invest in long-term solutions focusing on quality-of-education improvements will more likely be sustained: "Compared to the more slow-to-respond sectors of higher education, community colleges have become more entrepreneurial, flexible and responsive" (Associated Press, 2012, para. 7). Across the nation, these institutions should take into consideration the wise exhortations from the past. In 1999, Levitz, Noel, and Richter (1999) indicated that a revolution was "sweeping the campuses of the nation's colleges and universities" (p. 31). They further stated that

> The success of an institution and the success of its students are inseparable. Institutions that take this credo seriously commit the institution—and every individual in it, from the president to faculty members to support staff—to a path of radical and permanent change. (p. 31)

The conditions faced then are reminiscent of today as the authors elaborated,

> As budgets tighten, competition for students increases, resources shrink, and regents, legislators, taxpayers, and prospective students and their families take up the cry for institutional accountability, institutions that put students first will succeed, even excel, just as their students will. (p. 31)

DEFINITION OF TERMS

Terms and definitions that will be used are provided for clarity in Table 1.

Table 1: *Definition of Terms*

TERM	DEFINITION
Attrition	A negative institutional performance rate. Occurs when students fail to re-enroll at an institution for consecutive semesters. The opposite of retention.
Competency-based Education (CBE)	An educational model that measures student learning through the completion of pre-determined competencies rather than through the semester-based system and completion of Carnegie unit course credits.
Completion	Occurs with the achievement of a student goal which could include taking one or more classes, or earning a credential (certificate or degree), or transferring.
Cohort	A clearly defined group of students who take classes in succession together at a particular point in time. Performance of this group is often used as a persistence measurement.
Community College Completion Corps (C4)	Sponsored by Phi Theta Kappa Honor Society, this is a student-led initiative formed to raise awareness of the importance of college completion.
Course Management System (CMS)	A software application for the administration, documentation, tracking, reporting and delivery of on-line educational resources. The term is used interchangeably with Learning Management System (LMS).
Dropout	A student who enrolls in college classes but leaves before achieving their intended academic goal.
FERPA	The Family Educational Rights and Privacy Act (also referred to as the Buckley Amendment). A federal law administered by the Family Policy Compliance Office in the U.S. Department of Education which applies to all educational institutions that receive funding under programs administered by the Department of Education including public community colleges.
Formative Evaluation	An assessment of a project/activity during early application or implementation (during formulation). Used to provide information about how to implement revisions or modifications for improvement. Used for pilot projects, to monitor ongoing programs, and to provide ongoing feedback if required.
Lagging indicator	Data used to diagnose a trend after it has occurred (i.e., retention rates, graduation rates, college grade point average). Often used with summative evaluation.
Leading indicator	Data used to predict what later results will be (course attendance, assignment completion, level of student engagement) or before a cycle starts (ACT/SAT scores, high school grade point average). Used with formative evaluation.
Learning Management System (LMS)	A software application for the administration, documentation, tracking, reporting and delivery of on-line educational resources. The term is used interchangeably with Course Management System (CMS).

Term	Definition
Persistence	Occurs when a student stays within the higher education system from the first year and each consecutive year until a degree is completed. A student perspective.
Retention	A positive institutional performance rate. Occurs when students are retained from their first year and each consecutive year until a degree is completed. The opposite of attrition.
SSCR	The Successful Course Completion Ratio is used to determine the successful course completion percentage for one student.
SSP	Student Success Profile – A digital reference area which houses data pertinent to student retention and success.
Slowdown	A full-time student who reduces their course schedule to become a part-time student.
Stayer	A student who enrolls continually each consecutive semester.
Stop-Out	A student who enrolls for one or more classes, fails to enroll in the next consecutive semester, then re-enrolls in one or more classes.
Success	When a student completes an academic goal including one or more courses, a certificate or a degree. Institutionally, this is a summative assessment measure using graduation rates, retention rates, or persistence rates. A formative assessment measure used at the course level is grade attainment.
Summative Evaluation	An assessment of a project/activity performed at the end of its cycle. Used to provide information about decisions regarding the adoption, continuation or modification of the project/activity. Used for reviewing long-term program/activity goals or reporting requirements.
Swirler	A student who enrolls in more than one institution simultaneously.
Withdrawal	Occurs when a student or an instructor officially notifies the institution that the student will not be completing courses. Also known as "dropping" a course.

STUDENT SUCCESS MEASUREMENTS

From an institutional perspective, key indicators of student success—such as student

persistence, completion, and retention—can be internally monitored, measured, and improved.

Persistence, an individual performance indicator of academic satisfaction and success, is

measurable. Student goals can be determined at the beginning of each term, and the assessment of those goals can be measured at the end of the term (Levitz et al., 1999).

While persistence and graduation measurements serve as nationally recognized indicators, they aren't without controversy. Swirlers, who enroll in more than one institution before graduation, can affect persistence measurements that also include non-swirling counterparts. Freshman-to-sophomore persistence measurements address student vulnerabilities that vary significantly between four-year institutions (72.4% in 2012) and two-year institutions (55-58% in 2012) (Mortenson, 2012). These data indicate the opportunity for effective and early intervention at two-year institutions.

The accepted practice for determining college completion is to use national graduation rates. Whether data are from the U.S. Census Bureau (USCB), American College Testing (ACT), or the National Student Clearing House Research Center, comparable results can vary significantly as measurement guidelines aren't standardized. These include how graduation is defined, how swirling students enrolled at multiple institutions are determined, the length of time for degree completion, the method of data collection, and the reliability of reported data.

USCB data include a sample of nearly 60,000 households limited to a civilian, non-institutional population. Data reported by the USCB for 25- to 29-year-olds completing college in 2010 indicate significant differences between students graduating with a bachelor's degree and students graduating with an associate's degree (Mortenson, 2012). Table 2 compares 2010 bachelor's degree completion rates to associate degree completion rates by gender and race/ethnicity. For all 25- to 29-year-olds, 53.5% completed a bachelor's degree, whereas 15.5% completed an associate's degree. For these same age groups, 55.3% of all males and 52% of all

females completed a bachelor's degree compared to less than 16% of both genders completing

an associate's degree. Graduation statistics for race and ethnicity are also provided in Table 2.

Table 2: *A Comparison of 2010 Bachelor's Degree and Associate Degree Graduates*

	BACHELOR'S DEGREE	ASSOCIATE'S DEGREE
All	53.5%	15.5%
Male	55.3%	15%
Female	52%	15.9%
Black	40.4%	18%
Asian/Pacific Islanders	76.4%	9.6%
Hispanic	41.8%	19.1%

The variation in graduation rates helps to explain what is happening to specific

demographic groups as they move through their educational experience, but it doesn't explain

why graduation rates are significantly higher for bachelor's degree graduates or for specific

student demographic groups. For this reason, graduation data, data definitions, limitations, and

student attainment goals must be clearly understood before findings are interpreted or

reported.

The definition of student retention is more broad. It is the primary gauge and

institutional performance indicator of collective student success (not just academic) and it

determines whether the goals of student satisfaction and success are being met. To be true to

their missions, and to support their reason for existence, universities and colleges should seek

ways to retain students until their academic goals are completed. Society supports higher

education because it "believes college prepares students for the economy, for society and for life" (Raisman, 2008, para. 8).

Retention itself is not the only goal because it includes several key indicators of success: how much students feel valued and respected, how much learning and student growth is taking place, and how effectively student expectations and needs are being met. When levels of these key success indicators are high, students seek ways to continue enrolling in classes, even when they face financial or personal pressures. Retention is a measure of the overall institutional product (Levitz et al., 1999).

Community Colleges would benefit from re-evaluating how they invest in retention. Compared to the cost of advertising, recruitment, and admissions, retaining students is less expensive. With a stronger focus on the classroom experience where students spend most of their educational journey, student success is more likely: "For community college students, the classroom is the primary connecting point to everything the college offers, and their instructors are potentially the most important bridge to both support services and other relationships they will form at the college" (McClenney & Arnsparger, 2012, p. 48).

Retention research also consists of two student extremes. A stayer is easier to identify and track compared to a dropout who could return to college at any time. In the center of these two retention extremes is the stopout who may quit school due to a financial shortfall or a family crisis and return a semester or a year later. Other stopouts might start school, drop out to work or to raise a family, and return years or even decades later. Further, a student defined as a dropout could be redefined as a stopout at any time. Another student retention category,

known as a slowdown, includes a full-time student who is forced into a part-time schedule with

a reduction in the number of courses being taken (Education Encyclopedia, 2012).

Because retention has historically been used as a key indicator of institutional

effectiveness, a collaborative research movement has been formed. Despite all of this effort,

many campus officials across the country are dissatisfied with low retention rates and

unresolved issues related to retention. An American College Testing report states that for

freshmen who do not return to school for their sophomore year, the dropout rate at highly

selective institutions is 8%, at less selective institutions it is 35%, and at open enrollment

community colleges it is nearly 50% (Devarics & Roach, 2000). There are two possible

perspectives for these extreme variations between highly selective institutions and community

colleges. Either community colleges are less successful in retaining students or using a dropout

rate is an ineffective community college retention indicator.

A high rate of attrition—the opposite of retention—is a significant problem for

institutions of higher learning, and it can serve as a negative performance indicator: "When a

student drops out after the first term or first year, the institution suffers a significant loss of

revenue in future years as a result of tuition 'lost' to it" (Levitz et al., 1999, p. 32). It is also

disheartening to see students expend a financial investment only to drop out of college before

educational goals are completed. Furthermore, unhappy students can negatively influence

other students by discouraging them from enrolling for the first time or deterring them from re-

enrolling. Tinto (1999), a highly-regarded author in the field of student retention research,

states,

To be serious about student retention, institutions would recognize that the roots of attrition lie not only in their students and the situations they face, but also in the very character of the educational settings, now assumed to be natural to higher education, in which they ask students to learn. (p. 5)

STUDENT ATTRITION FACTORS

Research has been extensive regarding the reasons why college students drop out. A 2009 survey of more than 600 young students between the ages of 22-30 revealed the following influential factors: rising tuition costs, poor academic preparation and study skills, minimal student support and advisory services in higher education, too many young people going to college against their wishes, and too many professors and advisers who feel that completion is the responsibility of the student (Public Agenda Report, 2009).

Tinto (1993) has shown that 70-80% of students leave college for non-academic reasons. Some students struggle to adjust, are overwhelmed, or are underprepared for the magnitude of academic and social change provided by a college environment. They have difficulty determining what they want to pursue academically or they change academic goals, both of which impede momentum. Students who have limited experiences with the college and are unable to integrate into the campus experience lack commitment and are more likely to leave. Most importantly, when students don't interact with other members of the institution, particularly faculty, they will feel alone in the learning process and are more likely to drop out (Tinto, 1993).

Levitz et al. (1999) found the following:

Freshmen enter with some anxiety or apprehension about beginning a new educational venture. Some of these students also bring complex educational and personal issues that dictate the need for even more comprehensive and individualized support services

than institutions are currently set up to provide. And further, our recent research suggests that affective variables (such as study habits, academic confidence, desire to finish college, attitude toward educators, self-reliance, family emotional support, and openness) contribute much more to attrition than was ever thought to be the case. (p. 37)

The authors additionally provide five general categories that impact a student's decision to drop out. They include:

1. Personal reasons: lost, stressed, undisciplined, unmotivated, insecure, uninformed.

2. Social reasons: alienation, isolation, being subject to negative peer pressure, uninvolved in college activities, weak relationships with faculty members or advisors.

3. Academic: underprepared, under challenged, poor study habits, doesn't see value in assignments and courses, low academic performance, part-time course load, lack of educational career goals, feedback is too delayed.

4. Life issues: insecurity about finances, job demands, time management issues, home and family difficulties, personal problems, health problems.

5. Institutional issues: getting the runaround, operational issues (such as billing and scheduling), negative attitudes in the classroom, low-quality advising, low-quality administration, poor or indifferent teaching, outdated instructional equipment or technology.

Although many of the reasons for leaving are beyond the college's ability to amend, some of the reasons suggest areas where institutional intervention would be helpful. Kangas (1991) has shown that 71% of withdrawn students thought about leaving school in their first four weeks of attendance and 85% did not talk to their instructor about withdrawing.

Community colleges have organized themselves around the themes of ease in entrance, exit, and reentry. Having made a considerable effort to recruit students and offer them something useful, most community college stakeholders want to keep students enrolled, at least until degree or program objectives have been fulfilled. It is a challenge for an institution built on the theme of easy access to limit easy exit (Cohen, Brawer, & Kisker, 2014). Using the

general student attrition categories provided by Levitz et al. (1999), institutions should consider

potential solutions shown in Table 3.

Table 3: *Attrition Categories and Institutional Solutions*

ATTRITION CATEGORIES	INSTITUTIONAL SOLUTIONS
Personal reasons: lost, stressed, undisciplined, unmotivated, insecure, uninformed	Early semester detection of student issues, assist students with individual issues, check on "high risk" students frequently.
Social reasons: alienation, isolation, being subject to negative peer pressure, uninvolved in college activities, weak relationships with faculty members or advisors	Provide opportunities for students to be engaged with each other, with faculty and staff.
Academic Issues: underprepared, under challenged, poor study habits, doesn't see value in assignments and courses, low academic performance, part-time course load, lack of educational career goals, feedback is too delayed.	Educate students about how to be better students. Provide students with on-campus resources to research workplace opportunities to assist with academic pathway selection.
Life issues: insecurity about finances, job pressures, academic time conflicts, home and family difficulties, personal problems, health problems	Provide locations for students to become informed about where to seek help or get needed counseling.
Institutional issues: getting the runaround, operational issues, negative attitudes in the classroom, low-quality advising, low-quality administration, poor or indifferent teaching, outdated instructional equipment or technology.	Implement an "undercover student" program or simulation where employees can physically walk through the administrative process. Faculty should receive performance evaluations. Peer review for classroom quality evaluation should be considered. Faculty should inform administration about needed technology training or equipment needs.

STAKEHOLDER FOCUS

Meaningful, thoughtful, and systematic solutions won't happen quickly, but community

college stakeholders focusing more closely on the student experience and overall student

success will be more likely to thrive in the future. For these colleges, the old adage that "it is

cheaper to keep an existing customer than to court a new one" applies (Tomar, n.d. para. 50).

National Initiatives

To their advantage, many national initiatives support the community college student

retention and success movement. Today, the U.S. ranks 12th in the world for four-year degree

attainment among 25-34 year olds—a significant change from 1990 when the U.S. ranked first

in the world. As a result, President Obama introduced the College Completion Goal in 2010 to

regain the highest proportion of college graduates in the world by 2020 (The White House,

2010). Along with many state governors, private businesses, higher education systems and

institutions, the College Completion Goal has spurred 12 additional national initiatives focused

on increasing student success and educational attainment (American Association of Community

Colleges [AACC], 2016), shown in Table 4.

Table 4: *Nationally Sponsored College Completion Initiatives*

INITIATIVE	SPONSORED BY	PURPOSE
Access to Success (A2S)	National Association of System Heads (NASH) and The Education Trust with funding partners the Lumina Foundation for Education and the Bill & Melinda Gates Foundation.	To cut the college-going and graduation gaps for low-income and minority students in half by 2015.
ACE Commission on Education Attainment	American Council on Education (ACE), American Association of Community Colleges (AACC), American Association of State Colleges and Universities (AASCU), Association of American Universities (AAU), Association of Public and Land-grant Universities (APLU) and National Association of Independent Colleges and Universities (NAICU).	To assess the need for improved college retention and attainment and to chart a course for improvement.

INITIATIVE	SPONSORED BY	PURPOSE
Achieving the Dream	Lumina Foundation for Education and over 20 funders.	To help more community college students, particularly low-income students and students of color, stay in school and earn a college certificate or degree.
Adult College Completion Network	Western Interstate Commission for Higher Education (WICHE) with funding partner the Lumina Foundation for Education.	To unite organizations and agencies working to increase college completion by adults with prior credits but no degree in a collaborative learning network.
Boosting College Completion for a New Economy	Education Commission of the States (ECS) with funding partner the Bill & Melinda Gates Foundation.	To work with legislative and higher education leaders to improve their state economies by increasing the number of residents with a postsecondary credential.
College Completion Agenda	College Board with collaborating partners the National Conference of State Legislatures (NCSL), Excelencia in Education and National Council of La Raza.	To increase the proportion of 25- to 34-year-olds who hold an associate degree or higher to 55% by the year 2025 in order to make America the leader in educational attainment in the world.
College Completion Challenge	American Association of Community Colleges (AACC), Association of Community College Trustees, the Center for Community College Student Engagement, the League for Innovation in the Community College, the National Institute for Staff and Organizational Development and Phi Theta Kappa Honor Society.	To promote the development and implementation of policies, practices and institutional cultures that will produce 50% more students with high quality degrees and certificates by 2020, while increasing access and quality.
College Completion Initiative	Southern Regional Education Board (SREB).	To increase graduates with postsecondary career certificates and associate's and bachelor's degrees, so that 60% of each state's adults ages 25 to 64 will have one of these credentials by 2025.
Complete College America	Carnegie Corporation of New York, Lumina Foundation for Education, Bill & Melinda Gates Foundation, W.K. Kellogg Foundation and Ford Foundation.	To increase the number of Americans with a college degree or credential of value. To close attainment gaps for traditionally underrepresented populations.

INITIATIVE	SPONSORED BY	PURPOSE
Complete to Compete	National Governors Association (NGA) with funding partners the Bill & Melinda Gates Foundation, Lumina Foundation for Education and USA Funds.	To raise national awareness about the need to increase college completion and productivity and the consequences of inaction. To create a set of common higher education completion measures that governors can use to monitor state progress.
Ensuring America's Future by Increasing Latino College Completion (EAF)	Excelencia in Education. The project is a collaboration of 60 organizations, including ACT, Inc., American Council on Education, College Board, Complete College America, Hispanic Association of Colleges and Universities, Institute for Higher Education Policy, Jobs for the Future and National Conference of State Legislatures with funding partners the Bill & Melinda Gates Foundation, Lumina Foundation for Education, and Kresge Foundation.	To inform, engage and sustain efforts to promote the role of Latinos in making the U.S. the world leader in college degree completion.
National Coalition for College Completion (NCCC)	Institute for Higher Education Policy (IHEP). The project is a collaboration of more than 20 organizations, including Boys and Girls Club of America, Business Roundtable, Center for American Progress, Center for Law and Social Policy and National Urban League with funding partners the Ford Foundation, Lumina Foundation for Education and Bill & Melinda Gates Foundation.	To demand a policy agenda that encourages higher education institutions to provide better support to underrepresented students.
Project Win-Win	Institute for Higher Education Policy (IHEP). The project is a collaboration of: State Higher Education Executive Officers (SHEEO)—evaluation partner with funding partners the Lumina Foundation for Education and Kresge Foundation.	Focus wholly on the associate degree to improve completion rates at participating colleges through a retroactive award process. To improve institutional data systems, student tracking, advising, and communication with students.

At the national level, persistence data are focused on gross measures of high school and

college graduation and attainment. At the state level, persistence data are cumulated for

performance-based budgeting purposes. At the institutional level, persistence data are used to examine retention and graduation fluctuations, the success of student cohorts, and institutional performance data that are compared to peer institutions (Mortenson, 2012).

Revenue Implications

At the institutional level, persistence data are used to predict future revenue, but they can also be used to predict lost revenue that could be gained by increasing campus-wide retention initiatives. Levitz et al. (1999) provide a "Retention Savings Worksheet" that can be used to calculate the total institutional revenue that could be saved by reducing first-to-second-year attrition rates (p. 33).

In the last row of Table 5, an example of a community college with 6,000 full-time, first-year students is multiplied by a sample dropout rate of 30% resulting in a total of 1,800 students dropping (Column C). The institutional annual net revenue amount of $6,500 is multiplied by an estimated percentage of institutional earnings for each student during their two community college years (Columns E and F) to determine the total net revenue generated by one graduate of $7,475 (Column G). The total net loss for all dropped students is then calculated by taking 1,800 dropped students (Column C) by $7,475 or the total net revenue generated from one graduate (Column G) resulting in $13.4 million (Column H). The revenue generated by reducing the total number of students dropped by 10% is calculated to be a savings of $1.3 million (Column I).

Table 5: *Revenue Gained by Reducing First-To-Second-Year Dropped Students by 10%*

A. TOTAL FULL-TIME, FIRST-YEAR STUDENTS FOR FALL SEMESTER	B. FIRST-TO-SECOND YEAR DROPOUT RATE	C. TOTAL # OF STUDENTS DROPPING (A * B)	D. AVERAGE ANNUAL NET REVENUE PER STUDENT	E. FRESHMAN YEAR EARNINGS FOR EACH STUDENT (D * .25)	F. SOPHOMORE YEAR EARNINGS FOR EACH STUDENT (D * .90)	G. TOTAL NET REVENUE GENERATED FROM ONE FULL-TIME, FIRST-YEAR STUDENT TO GRADUATION (E + F)	H. TOTAL NET LOSS FOR ALL DROPPED STUDENTS (C * G)	I. TOTAL ADDITIONAL REVENUE SAVED BY REDUCING THE FIRST-TO-SECOND-YEAR DROPOUT TOTAL BY 10% (H * .10)
2,000	0.3	600	$6,500	$1,625	$5,850	$7,475	$4,485,000	$448,500
4,000	0.3	1,200	$6,500	$1,625	$5,850	$7,475	$8,970,000	$897,000
6,000	0.3	1,800	$6,500	$1,625	$5,850	$7,475	$13,455,000	$1,345,500

Adjustments to the values in Columns A, B, or D and estimated earnings rates in columns E and F can be changed to more accurately reflect data from a specific institution. Levitz et al. (1999) further suggests that if the number of dropped students could be significantly reduced, there is the potential to save "hundreds of thousands of dollars even at very small institutions" (p. 33). Adjusting the dropout rate of 10%, shown in column I, by a higher percentage can provide an estimate of additional savings. Table 6 includes Column H, from Table 5, or the total net loss for all dropped students, multiplied by 10%, 20%, and 30%.

Table 6: *Revenue Gained by Reducing First-To-Second-Year Dropped Students by Varying Percentages*

H. TOTAL NET LOSS FOR ALL DROPPED STUDENTS	TOTAL ADDITIONAL REVENUE SAVED BY REDUCING THE FIRST-TO-SECOND-YEAR DROPOUT TOTAL BY:		
	10%	20%	30%
$4,485,000	$ 448,500	$ 897,000	$ 1,345,500
$8,970,000	$ 897,000	$ 1,794,000	$ 2,691,000
$13,455,000	$ 1,345,500	$ 2,691,000	$ 4,036,500

Negative financial consequences of early student departure also affect the interests of other significant stakeholders. Institutional auxiliary services such as the cafeteria, college bookstore, attendance at college events, and student fundraisers experience losses. Local businesses that support college campuses such as suppliers of material and services, laundry facilities, restaurants, and gas stations are also affected. Students may also be left with loans that affect their credit and their ability to purchase cars and homes in the future.

Community colleges must be careful not to focus entirely on student retention. Scherer and Anson (2014) suggest that at some institutions, open-door admissions policies and the national college completion agenda are contributing to an influx of unprepared students who have limited chances of earning a degree. The overall view of student success should include the acquisition of knowledge and skills that contribute to future employment as well as favorable grades to prove their academic accomplishments. Without this equally important component, the completion agenda isn't truly complete.

Infrastructure for Success

Faculty who are passionate about creating change and dedicated to the retention effort are vital. Encouraging passionate faculty and other equally passionate campus employees to develop collaborative retention and success solutions is powerful. "There's not a single, silver-bullet solution to student retention and success," says Thom Brooks, Vice President of Instruction and Student Learning at North Carolina Southwest Community College. "It takes a number of efforts to address the problem. Even a small beginning, tackling a single effort, will build momentum on campus to develop other efforts" (AACC, 2014, para. 17). Recent trends have seen retention increasingly recognized as the responsibility of all educators on campus even when there are specialized staff members solely dedicated to improving retention (Berger, Blanco Ramirez, & Lyons, 2012).

Faculty have the potential and the opportunity to be extremely effective retention advocates and contributors to student success. A major portion of the community college experience occurs inside the classroom where students are only on campus immediately

before, during, and after class (Barnett, 2010). Faculty are in many ways the first, the most

effective, and the most important contact for students. Direct retention efforts are one-on-one

activities, and beneficial results depend on productive faculty/student relationships. Students

who interact with their teachers develop a support network and are more likely to persist in

classes (Tinto, Russon, & Stephanie, 1994). One of the most direct ways to impact student

satisfaction and subsequent retention is through faculty involvement inside and outside of

classrooms.

Another key group of community college stakeholders includes employees providing a

wide-range of student services. These include recruitment and retention; counseling and

advising; orientation; student activities; student health; financial aid; academic support; career

centers; transfer centers; remedial education; student screening and testing of core skills; and

supplemental services such as transportation, childcare, and services tailored for specific

populations of students. These employees are actively engaged with students and are thus key

promoters of positive student support.

Institutional research (IR) departments, with the exception of a few community colleges,

are not well supported and are often understaffed. Employees in this department are heavily

involved with compliance reporting and performance accountability reports which target

student retention, transfer, graduation, job placement success, performance on licensing

exams, and student satisfaction. According to Cohen et al. (2014), "IR offices produce a sizable

number of reports useful not only to their own colleges but also to analysts seeking out data

about program effects" (p. 365). With today's improved technology, they are also capable of

providing enhanced data analytics that can directly assist with student retention and success initiatives.

First and foremost, retention is about students. Community college student populations that have become more diversified require a focused retention effort that serves a wider range of student needs. Levels of preparation, motivations, and other individual characteristics shape the reasons why students attend college and why they may not. These reasons directly impact the chances that students will be retained and persist to earn a postsecondary degree (Berger et al., 2012).

THE IMPACT OF TECHNOLOGY

Learning expectations are evolving as well as the technologies now being used by current and future college students. These technologies include advanced hardware (e.g., personal computers, tablets, smart phones, and wearable devices) and advanced software (e.g., interactive web content, application software, social media, and a variety of phone apps). "Tech savvy" college students who send and receive information at lightning speed may expect a similar communication experience in college classrooms when retrieving course assignments, creating projects, taking exams, and receiving grade results. Levitz et al. (1999) posit that "expectations are critical: they serve as the point from which students make qualitative judgments about an institution" (p. 34).

Frustrations arise and course completions are inhibited when technically oriented learners are enrolled in courses taught by sage-on-the-stage college professors who predominantly use traditional classroom methods. These classes are characterized by one-to-

many lectures delivered during a set time period that require the rote memorization of facts and figures, with paper assessments that require delayed grade results. Faculty who consistently rely on traditional classroom methods should be concerned about how negative experiences, which are quickly and easily being communicated to other students through the use of technology, may affect future enrollment. Inefficient teaching practices that consume the energy and time of faculty could otherwise be spent engaging with students in ways that are much more efficient and effective. Levitz et al. (1999) indicate that among the many reasons students drop out, some of those reasons include limited involvement with faculty, poor or indifferent teaching, and instructional equipment or technology that is out of date. The success of a student depends significantly on the exchanges with each instructor and staff member for good or for ill (C. Wells, 2009).

Today, faculty are expected by many college stakeholders to deliver courses using multiple methods (in-class, online, and hybrid) and to incorporate technology tools into the classroom experience. A recent survey of 519 enrolled college students conducted by VitalSource Technologies, Inc., revealed that 74% of student responders "feel they could get even better grades if their professors used even more tech in the classroom" (PRNewswire, 2015, para. 5). Through the use of current technologies, working individually with students can happen anywhere, at any time, and doesn't require much time. Eddy, Sydow, Alfred, and Garza Mitchell (2015) posit that "technology can be used to alter instruction so that instructors can spend more time working individually with students, and students can spend more time engaging with the content and learning materials, enabling a focus on higher-level learning" (p. 49).

THE RESEARCH

This product dissertation will be practitioner focused and relevant to the current and critical retention issues faced by community colleges as well as other institutions of higher learning. Using retention research as the framework, this dissertation will provide a recommended model of student success initiatives based on existing institutional approaches and best practices. While the research supports the use of this model at community colleges, its design can be utilized in any higher education institution classroom setting.

This research answers the following questions: How can proven retention theories be used to aid future retention efforts? How are faculty and staff at selected institutions of higher education using best practices and current technologies to assist students with course completion and goal achievement? What categories of innovations and technology tools are available to assist faculty and faculty partners with retention?

SUMMARY

Since 2010, community college enrollment has continued to decline, which has resulted in the need for an intense and enhanced focus on student retention and success. While they were changing the canvas of higher education when first established, current community college practices more closely match those of traditional universities. Governments and citizens at national, state, and local levels are now much more demanding of accountability for and the reporting of student success. Retention research indicates that there is an abundant opportunity for higher education stakeholders to be far more proactive in assisting students with the completion of their college goals. Students make critical decisions about continuing

their classes based on their interactions with faculty and with the technologies being utilized.

This dissertation will include a literature review, a conceptual model design for student

retention, a physical model suggesting the use of current technologies and innovations, needed

program resources, and suggestions for model implementation.

CHAPTER 2: LITERATURE REVIEW

INTRODUCTION

Although retention research dates back to the early 1900s, efforts to systematically

identify attrition causes and suggest possible retention solutions became much more prevalent

during the 1970s. While the research is abundant, it focuses predominately on efforts at the

university level and on institutional research regarding graduation rates and persistence rates.

Far less attention has been devoted to understanding unique issues regarding the retention of

community college students. As the largest and most important portal to post-secondary

education, improving retention rates and other measures of success (e.g., degree attainment,

transfer) among community college students is critical to the welfare, both economic and

educational, of the United States (R. Wells, 2008). This review of literature explores and

compares published studies and reports relevant to retention in higher education.

RETENTION AND STUDENT SUCCESS

An abundance of higher education retention research started in the 1930s and the

majority of this research has been conducted during the last 50 years. There is a renewed

interest in this topic as changing student demographics on college campuses, global

competitiveness, and declining government support continue to be major issues for all higher

education institutions. Even so, current statistical data indicate that there still exists significant

room for improvement: "Despite the availability of copious literature on college student retention, rates have remained essentially unchanged over the last two decades" (Morrison & Silverman, 2012, p. 62). Beginning with the last 40 years of research, a comprehensive review of retention theories, models, and concepts will assist with the presentation of a new model to consider for the improvement of student persistence and success.

Spady (1971) presented a sociological model hypothesizing that the reasons for students dropping out or being retained are directly linked to the interaction between the student and the college environment. He suggested that successful integration into the academic system can be either extrinsic (i.e., grades) or intrinsic (i.e., intellectual development). Student characteristics—their values, interests, skills, attitudes, are exposed to the norms of a college environment that include faculty, peers, staff, and administrators. He further stated that if the student and the environment are congruent in their norms, the student would be more likely to assimilate socially and academically, increasing the likelihood of persistence. Although Spady's research was limited to an analysis of dropout behavior for a single institution, it was a catalyst for future research.

Kamens (1971) presented an additional sociological perspective that examined how large institutions impact student retention and occupational choice. He posited that social charters had the ability to bestow a social status on graduates that facilitated entry into professional occupations. The more prestigious the college's perceived reputation, and the more charter membership was heightened, the greater the perception of value. He also concluded that students with similar aspirations attending small colleges were more likely to drop out. Because of his limited sample size, Kamens' findings were not highly regarded.

Nonetheless, his perspective, which examined the influence of external environmental factors, motivated others to include his work as part of a wider-range of research. This is relevant to community college retention research because external environmental factors significantly influence students.

Social integration theory, introduced by Tinto (1987), claimed that the more integrated students felt within their respective academic and social college communities, the more likely they would be to persevere toward their academic goals. He hypothesized that students needed to progress through three non-distinctive, non-sequential stages of integration that some students might experience partially while others might experience more fully. The first stage was separation from a past community where they disassociated, in varying degrees, from family members, a former school, or a residential area. The second stage was transition— or the period between the first stage of separation and the third stage of full integration into a new community. In the third and final stage, students would be fully incorporated into a new college community academically and socially. Formal academic integration referred to the congruence between a student's ability and the academic demands of the institution. Informal academic integration referred to the congruence between the values held by the student and the common values held by the members of the college including faculty, staff, and other students. He further theorized that communication between the students and members of the college did not guarantee congruence, but that the absence of such communication might contribute to attrition. Formal social integration was considered to be characterized by student involvement that was structured (i.e., the college newspaper, clubs, student government),

whereas informal social integration was defined as interactions with friends or other peer groups.

Compared to Spady (1971) or Kamens (1971), Tinto's (1987) integration theory is a much more comprehensive view of the student experience. It is also highly relevant to understanding the behaviors of community college students who progress through the various stages of integration in a pattern that is unique.

Bean and Metzner (1985) narrowed their research focus to only include nontraditional students—those who were older than age 24, commuted to the college, or were enrolled part-time—and found that they were rarely socially integrated into their institutions. Unlike Spady (1971) and Tinto (1987), who focused heavily on social variables, they hypothesized that dropout decisions for nontraditional students were based on four sets of variables, including academic, background, psychological, and environmental. Influential academic variables included poor or strong study habits, course attendance, academic advising, and the declaration of a major. Key background variables included a strong or weak high school grade point average, clearly defined or weak educational goals, age, enrollment status, ethnicity, and gender. Significant psychological variables included low or high levels of satisfaction, goal commitment, and stress. Important environmental variables consisted of finances, hours of employment, outside encouragement, family responsibilities, or an opportunity to transfer. Of the four influential sets of variables, Bean and Metzner concluded that environmental variables have the most effect on dropout decisions for nontraditional students, even when academic variables are favorable. A combination of Tinto's (1987) integration theory and Bean and

Metzner's nontraditional student focus will significantly contribute to a proposed community college retention model.

Seidman (2005) suggested that retention should be "defined as student attainment of academic and personal goals, regardless of how many terms a student [was] at the college" (p. 21). He proposed a new retention formula which combined early identification of academic and/or personal deficiencies with intensive and continuous intervention. Suggested as a preventative approach, he recommended that colleges openly communicate the purpose of this formula to students so that they "understand the process, the reason he or she was asked to participate in it, the expected outcomes, and the consequences" (p. 300). Based on Tinto's (1987) retention model, he advised that intervention programs should occur as early as possible for students who are identified as benefiting from such assistance.

Seidman (2005) also specified two intervention categories: intensive and continuous. Intensive intervention would be powerful enough to permanently change the student's academic or personal ability to achieve their intended goals. This type of intervention might require a substantial amount of time and should only target individualized skills identified for each student. In other words, students should not be forced to repeat courses to attain skills they have already successfully completed or mastered. Continuous intervention, applied with no particular consideration for an academic schedule, meant that students should be provided support until desired skills allow the achievement of academic or personal goals.

Seidman's (2005) retention approach recognizes that students might reach academic or personal goals before graduating. For that reason, he postulated that retention measurements that exclude a student's academic or personal goals might not provide a complete assessment

of student need. His theory can be applied to community college students who may reach their intended academic goals by taking only a few courses and/or taking them in a non-sequential order.

There is a significant body of research that seeks to explain the reasons for student attrition and retention. Additional causes and areas of focus include the impact of institutional expenses, the receipt of financial aid, the socialization of students with specific demographic traits, motivational variables, goal-setting theory, self-efficacy beliefs, academic self-concept, and optimism. From this plethora of research, it is Tinto's (1987) model of academic and social integration that is most frequently referenced and practically applied.

Tinto (1987) further recommended that colleges focus their attention primarily on those forms of departure that are clearly understood by both the college and the student as educational failures. Because no single intervention strategy will prevent students from leaving, a large volume of varying interventions, services, or programs may be needed. The more that the experience can be customized to enhance the academic life of the student, the better the proposed results are likely to be. With available resources and institutional goals in mind, each college must create and implement its own uniquely designed program for its own unique students.

COMMUNITY COLLEGE RETENTION ISSUES

While retention research and theory may be well-established, there is relatively little research that targets community college student retention (Wild & Ebbers, 2002). Instead, the larger majority of this research is not published, not widely distributed, and is more than likely

not peer-reviewed which challenges a scholar to interpret existing findings (Bailey et al., 2004). It can also be difficult for academics to gain access to community college campuses in order to conduct research. Additionally, they noted that large-scale national data sets are limited in terms of the detail that can be provided about specific institutional characteristics, policies, and practices related to student success. Regardless of institutional size, "the concept of retention and its appropriate measurement tools still remain cloaked in a significant level of ambiguity" (Hagedorn, 2012).

Tinto (1987) expanded his integration theory to include how external events have an impact upon a student's departure from college—including community colleges. He stated, "For the most part they [2-year colleges] are nonresidential in character and are frequently located in settings where the influence of external communities may be substantial" (p. 169). In addition, his research indicated that the impact of on-campus student integration as a retention factor might be more important to four-year institutions rather than to community colleges.

All colleges and universities are required to submit retention figures to federal and state entities, which is disproportionately more difficult for community colleges. This is due to the fact that community colleges report a higher rate of turnover, a more diverse student population, and a significant number of students who are considered swirlers. Nevertheless, maintaining an appropriate account of student performance is extremely important because of institutional reputation or because funding levels may depend on the institution's ability to retain a significant number of its students until academic goals are completed. With higher education under more scrutiny, rates of retention, graduation, and transfer have become much more important to the public.

The National Center for Higher Education Management Systems (NCHEMS) aggregates and reports Integrated Postsecondary Education Data System (IPEDS) data about the percentage of first-time college freshmen returning for a second year. Cohen et al. (2014) indicate that community colleges (or agencies on behalf of colleges) have traditionally defined retention as the percentage of students who remain enrolled from one fall term to the next. This methodology ignores two facts: that one third of community college students transfer to or take courses at other institutions and that some short-term occupational certificates can be completed in a year or less. These realities provide additional insight into the nationwide 2010 statistic that 53% of community college students were retained to their sophomore year (Cohen et al., 2014). They observed that "A more accurate gauge of student persistence involves subtracting transfers and completers from the denominator; limiting both the denominator and the numerator to degree or certificate seeking students" (p. 397).

Preparing students to transfer to a four-year institution remains a central mission of many community colleges; however, they are challenged by the reporting and evaluation of transfer rates as a key student success metric. Without a standardized definition or formula, accuracy and comparisons cannot be assured at the national or state level. Cohen et al. (2014) maintain that "Since community college matriculates arguably are potential transfers until they either show up at a university or die, the transfer rate calculations can never be fully reflective of student performance" (p. 396). While a typical community college transfer student is viewed as someone seeking a bachelor's degree, the transfer function may also be used by four-year students who enroll at a community college for one or a few courses or reverse transfer

students who attend community college after earning a degree from a four-year institution (Crisp & Mina, 2012).

In 1989, the Center for Study of the Community Colleges (CSCC) established the following definition for use in calculating a national transfer rate: all students entering the community college in a given year who have no prior college experience, and who complete at least 12 college credit units within four years of entry, divided into the number of that group who take one or more classes at an in-state, public university within four years (Cohen et al., 2014). For students entering college in 1995, the CSCC reported that 52.5% of students were receiving 12 or more credits within four years and that of those students, 25.2% transfer within four years (Cohen et al., 2014). The same statistics were corroborated by the National Center for Education Statistics (NCES), which found over 22% of those same students are transferring within three years (Bailey, Jenkins, & Leinbach, 2005). Additional data resources from the National Student Clearinghouse and the Beginning Postsecondary Students Longitudinal Survey provide statistics that are inflated when more than four years to transfer are included in the formula (Cohen et al., 2014).

Transfer rate studies can be modified by limiting research to community college students who aspire to complete a bachelor's degree. Intent to transfer can be an additional factor to include in the formula that determines an overall percentage of students reaching their goal. Cohen et al. (2014) point out, however, that these percentages can vary greatly without a standardized data collection question, and degree aspirations might diverge from a community college student's more immediate goals. Smalley, Lichtenberger, and Brown (2010) argue that the goals of community college entrants are often difficult to determine, while most,

if not all, four-year college entrants maintain the goal of earning a bachelor's degree. When considering community college students as compared to direct four-year college entrants, goals and aspirations do not necessarily translate to parallel academic preparation or the ability to navigate the higher education system.

As part of the 1990 enacted Student Right-to-Know Campus Security Act, higher education institutions are required to reveal their graduation rates to enable prospective applicants to make informed selection decisions. The graduation rate formula in this case includes the percentage of full-time, first-time, degree-seeking students enrolled during the fall semester. The threshold for completion includes six years for four-year colleges and three years for two-year colleges (Hagedorn, 2012). While the law is an attempt to provide comparative information for prospective college students, this definition excludes a large number of students who transfer, are part-time, are enrolled but not seeking a degree, have declared majors, and are remedial students. Cohen et al. (2014) submit that like transfer rates, the way graduation rates are calculated leads to vastly different conclusions about how well colleges are performing. These authors provide research data indicating that national community college degree and certificate attainment rates can vary from 14% to 36% depending on the definitions and databases used. College leaders and other advocates argue that the six-year attainment rate is a more accurate gauge of community college effectiveness whereas "critics of community colleges typically elect to use rates calculated after three or four years to bolster charges that the institutions are failing to graduate the vast majority of their students" (Cohen et al., 2014, p. 401).

Another approach to student success measurement was developed by the American

Association of Community College's (AACC) national Voluntary Framework of Accountability

(VFA) initiative (AACC, n.d.). As an alternative to the standard graduation rate indicator, the VFA

incorporates an aggregated measure which tracks, within two years, the percentage of full-time

students completing 42 credits and the percentage of part-time students completing 24 credits.

This aggregate measure is particularly useful as it recognizes the diversity of education and

training goals as well as attendance patterns among community college students (Cohen et al.,

2014). The VFA also broadens the definition of successful community college outcomes to

include earning a degree or certificate, transferring to another two or four-year college or

university, continued enrollment, leaving the institution after earning 30 or more credits,

employment outcomes, and success in adult basic education.

At all levels of education, unintended consequences may result when student progress

measures are emphasized too strongly. In 2011, a worst case scenario occurred in Georgia

where 44 Atlanta schools involving 178 teachers and principals cheated on state-administered

standardized tests (Sarrio, 2011). This launched a national discussion about the pressures of

linking the retention, payment, and promotion of educators to the amount of growth shown on

a standardized student performance measurement. At the college level, faculty and

administrators may feel a similar pressure to increase pass rates for college level courses or

push students through the system with passing grades they may not have earned. This method

of "gaming the system" to raise graduation rates has the potential for colleges to weaken

academic standards and may lead to faculty providing required reports on students who drop

their courses (Dougherty & Hong, 2006, p. 74).

Current retention measurements may result in inaccuracies as they provide inflated figures less representative of community colleges. They include students who are more likely to persist and generally exclude part-time students, returning students, transfer students, and students who prematurely leave after the first or second enrollment year. Conversely, retention formulas also allow the inclusion of some students who probably should not be included, such as students who enroll, drop their fall courses, then reenroll the following fall. There is also no specific measurement for students who take a cafeteria of courses that may not specifically target credits toward a degree or for students who are trapped in non-credit bearing remedial courses. Even though community colleges may be able to claim higher retention rates with students who are persisting, they are remiss in not being able to identify the entire scope of individual goal achievement (Hagedorn, 2012).

Fortunately, alternative approaches seek to apply nationally a variety of measures that can help define success. The Common Data Set (CDS) Initiative is a collaborative effort between higher education and various publishers, including the College Board, Peterson's, and *U.S. News & World Report*, to develop standardized definitions to be used in educational research (CDS Initiative, 2016). CDS seeks to improve college comparison data and to standardize survey questions being asked of colleges and universities. The CDS is popular among institutions that support the calculations and dissemination of specific institutional measures, which include the following 10 data areas: general information; enrollment and persistence figures; first-time, first-year (freshman) admission; transfer admission; academic offerings and policies; student life; annual expenses; financial aid; instructional faculty and class size; and degrees conferred.

This initiative serves to nationalize various measures that can help define success (Hagedorn, 2012).

To fully understand student success at the institutional level, additional indicators more common to community colleges can be used within newer formulas. These measurements would include students who are part-time, continuing, transfer, advanced, or students who begin enrollment at times other than with a fall cohort. Hagedorn (2012) indicates that a new annual proposed institutional persistence formula for degree seeking students would be: (Current total FTE degree seeking enrollment – Current year newly enrolled students) divided by (Past years fall FTE degree-seeking enrollment + FTE enrollment of degree seeking spring and summer – FTE graduates). This same formula could be used to determine persistence by discipline or major by replacing FTE students with those declaring a specific major (Hagedorn, 2012).

The institutional focus of community college student retention uses large, summative outcome measures known as lagging indicators (i.e., transfer rates, graduation rates) that are measured after an event has occurred (Gendron & Traub, 2015). Administrators who delay evaluation at the end of a term, year, or several years may be unable to understand the effectiveness of institutional interventions. For example, how can the impact of a campus-wide intervention such as mandatory student orientation be accurately correlated with graduation rate increases? Leading indicators, on the other hand, are metrics such as attending classes, completing assignments, or student participation. These data are frequent and formative, can offer predictive results of student retention and success, and can help assist with immediate faculty intervention. Data from leading indicators may be more challenging to capture and

interpret than lagging indicators, but community college stakeholders working together can develop measurement systems that include this type of predictive information. Gendron and Traub (2015) indicate that "if lagging indicators can be likened to an autopsy report, leading indicators are a patient's vital signs" (p. 1).

Standard measures of retention and persistence can also be expanded to include new alternatives. The Successful Course Completion Ratio (SSCR) makes a basic assumption that a student enrolling in a course is declaring the goal of completing a course. The SSCR includes is the percentage of courses the student complete compared to the number of courses in which the student enrolls. The formula for SCCR is calculated by taking the number of courses the student has completed with a grade of A, B, C, D, CR (credit), or P (passing) and dividing that number by the number of enrolled courses. A student who enrolls in four courses and successfully completes all of them therefore has an SCCR of 100%, whereas a student who completes only two of four enrolled courses would earn an SCCR of 50%. According to Hagedorn (2012), the Research and Planning Group for California and the Transfer and Retention of Urban Community College Students Project (TRUCCS) support the use of the SCCR. This measurement of student success would be very helpful for the community student population with diverse academic goals, students who frequently stop out, swirlers, or students who are not seeking a degree.

To more accurately assess an institution's ability to help students attain their goals, several colleges are tracking student intentions (Cohen et al., 2014). This information is acquired from students at the beginning of each registration period using a survey. Student goals are tracked over time and survey data are used to determine the percentage of students

who achieve their stated goals (Arizona Community Colleges, 2011). Using student intentions as a leading indicator can provide meaningful data to community colleges with unique populations of students.

According to Crisp and Mina (2012), "The biggest challenge community colleges face today is serving traditionally underserved populations and students who would not otherwise have the opportunity to attend college. More often than not, these students need assistance developmentally, academically, and socially" (p. 149). Using 2009 data from the Beginning Postsecondary Students Longitudinal Study, they presented data from a national sample of students who entered postsecondary education in the 2003-2004 year. From this group, community college students were characterized differently from students who attended four-year institutions. Community college students were more likely to be African-American or Hispanic (34% compared to 19% at 4-year universities), financially independent, first-generation college students (72%), less academically prepared, working part time or full time during college, working more than 20 hours per week (57%), having lower degree aspirations, attending college part-time (56%), delaying enrollment into college following high school, receiving less financial aid (an average of $5,967 less), and earning a lower GPA during the first year of college. Unlike traditional four-year institutions that enroll full-time students who typically live on campus in close proximity to other students and faculty, commuting community college students have substantially fewer opportunities to be engaged in ways that positively affect their retention. In addition, many barriers to success are common among community college students that are often external in nature or cannot be controlled by institutional support.

SUMMARY

The foregoing comparison of recent theories indicates that generally accepted retention measures are ambiguous, not standardized, and do not represent community colleges accurately. Therefore, additional measures are needed that not only address community college student performance but also provide a more accurate description of retention performance.

CHAPTER 3: CONCEPTUAL DESIGN

INTRODUCTION

This chapter will identify those who will most likely benefit from improvements to

retention and success activities, what information needs to be shared, what processes need to

be created, when the processes will take place, where they will be utilized, and why they should

be applied. Three categories of enhanced course design include the student profile, student

engagement, and performance monitoring. The processes or information needed to make

improvements to retention and success activities will be useful now and well into the future.

Specific technological and innovative strategies, used to determine how these improvements

will be implemented, will be provided in Chapter 4.

THE STUDENT PROFILE

Having a clear understanding of a student's academic history, barriers to academic

success, future goals, and other pertinent data can provide an overall profile useful for

promoting student success. The collection and protection of student data is a common practice

in higher education; however, using it proactively to help retain students and ensure their

success while making it available to a wider range of stakeholders is far less common.

While specific reasons for restricting access to student data may vary by institution, one

key factor includes concerns about compliance with the Family Educational Rights and Privacy

Act (FERPA). The following information is an interpretation of applicable FERPA requirements and does not supersede the legal statute or regulations.

FERPA defines educational records as those that contain information directly related to eligible students who have reached the age of 18 or who are enrolled in the institution. Institutions aren't generally required to maintain education records containing specific information, but they are required to provide certain privacy protections for records that are being maintained. Eligible students have the right to request an amendment to inaccurate or misleading education record information, and institutions are required to consider individual requests. However, they are not required to amend education records (U.S. Department of Education, 2011).

FERPA generally prohibits the improper disclosure of personally identifiable information derived from education records unless written consent from the eligible student has been obtained. However, exceptions to written consent are allowed when an institution annually notifies eligible students about allowable exceptions in a FERPA rights publication. Each institution must determine the details for these exceptions, which may include allowing school officials, including professors and instructors, to have access to education records if those individuals are determined to have "legitimate educational interest" in the information used to fulfill professional responsibilities (U.S. Department of Education, 2011). School officials are also allowed to retrieve information related to financial aid for which the student has applied, has received, or if the information is necessary to determine financial aid eligibility.

An institution may also disclose directory information to school officials without written consent if it has given public notice of the types of information it has designated as directory

information, the eligible student's right to restrict the disclosure of such information, and the period of time within which an eligible student must notify the school that he or she does not want any or all of those types of information designated as directory information. This information may include a student's name, address, email address, telephone listing, photograph, date and place of birth, major field of study, participation in officially recognized activities and sports, weight and height, members of athletic teams, dates of attendance, degrees and awards received, the most recent previous educational institution attended, grade level or year (such as freshman or junior), and enrollment status (full-time or part-time).

Another consideration regarding the use of student profile data for promoting student success is how it is evaluated and by whom. On most college campuses, the academic advising function provides the best opportunity for an institution to understand the profile of an individual student. However, data integrity isn't assured because advisors may be referring to academic history records which may be inaccurate or incomplete. In order to be useful, a complete student profile must be provided by the student with disclosures about barriers that challenge academic success, academic goals, or career goals in order to provide useful counseling.

Community colleges are specifically challenged to collect student profile data that would be useful for assisting individual students. The application process is the first key collection point followed by registration services. Academic advising provides another vital opportunity, but at many community colleges, advising isn't mandatory. At the beginning of the semester, faculty are typically provided with limited roster data to use for attendance verification. A logical option to consider for updating and verifying student profile data is the place where

attendance is mandatory—in the classroom. A prime time for student profile data collection

would be during the first week of classes when students are finalizing their schedules and

becoming oriented to a new semester.

Providing faculty with individualized student information regarding past academic

performance, barriers to academic success, student goals, and other pertinent data

accomplishes two important goals. It offers the opportunity for students to receive

personalized help from an additional source, and it confirms a message from administration to

faculty that students should be viewed not just as a group of names on a roster, but as

individuals within a group. Prior to the first day of class, faculty can use student profile data to

gain a better understanding of student characteristics and evaluate the ways to help them

succeed.

Many institutions currently provide names and other key information about students

who have learning accommodations, who are athletes, or who are involved in specialty

programs. If it is not the normal college practice to provide faculty with access to a wider range

of data relevant to student success, it may be met with some resistance. Nevertheless, it has

the potential to be viewed as a positive institutional improvement that widens student support

opportunities and prioritizes the commitment to student success.

Although academic advising at many community colleges is reserved for administrative

student services departments, faculty with knowledge about academic programs can contribute

significantly to student persistence. In order to encourage students to think about an

educational pathway early in their academic experience, at least one mandatory advising

session should be considered (Noel-Levitz, 2013a). A summary of survey results from a 2014

National Freshman Attitudes Report indicates that nearly half of today's incoming freshmen

want career counseling (Noel-Levitz, 2013b). Effective student support resources should also be

in place that will assist with the determination of career interests and current skills, match

those interests and skills with career options, and then use those career options to help

determine an educational pathway.

For students who have committed to an academic pathway or who have established

career goals, faculty can recommend future courses to take, refer students to formal academic

advising, direct students to investigate student clubs and organizations, and suggest events that

support their areas of interest. Additionally, faculty familiar with workforce programs can

provide information about career options or direct students to career planning services.

Another contributor to persistence involves faculty who intentionally and actively assist

students with the registration of courses for the next semester. Without consistent or effective

academic advising, students who aren't well informed will be more likely to make poor, very

costly, and time-wasting decisions that affect their future.

STUDENT ENGAGEMENT

When community college students are encouraged to actively engage with fellow

classmates and faculty, they are more likely to complete their coursework. Opportunities for

increased student interaction are unlimited, but there are specific areas where engagement

activities can significantly contribute to retention improvements. In order to understand what it

means to truly engage students, and in order to make transformational changes, it is important

to evaluate teaching methods that are both familiar and new.

While it is the goal of education to transfer knowledge and skills to students, one of the most widely implemented instructional techniques that seeks to accomplish this goal is also one of the least engaging—the standard lecture. While there may be advantages to lecturing, their offsetting disadvantages are easy to identify. For example, instructors have control of the classroom, but the process of transferring information is literally being dictated to students in a one-to-many format. While students might prefer the ease of a learning experience that requires so little of their effort, they may be prevented from expressing opinions and providing critical analysis. Lectures in rooms, some of which are very large and have multiple level seating, can accommodate a variety of audience sizes at one time, but missed lectures, regardless of the reasons, are disadvantageous to absent students. Lectures strive to enhance key concepts that add value to required reading, but if students were graded on their listening abilities, they would very likely fail. Nichols and Stevens (1958) indicate that "Our own testing shows—and it has been substantiated by reports of research at Florida State University and Michigan State University—that two months after listening to a talk, the average listener will remember only about 25% of what was said. In fact, after we have barely learned something, we tend to forget from one-half to one-third of it within eight hours" (para. 9).

Because the traditional lecture approach remains the prevailing method for teaching science in higher education, Deslauriers, Schelew, and Wieman (2011) conducted a study to determine if other engaging instructional approaches might be more effective. Control group data were used to measure the learning of a specific set of topics and objectives when taught by three hours of traditional lecture given by an experienced highly rated instructor. Experimental group data were used to measure the same learning of three hours of instruction

given by a trained but inexperienced instructor using instruction based research in cognitive

psychology and physics education. The techniques included pre-class reading assignments and

quizzes, in-class clicker questions, student to student discussions, small-group active learning

tasks and targeted in-class instructor feedback. Comparisons were made between two large

sections (*N* = 267 and *N* = 271) of an introductory undergraduate physics course. Deslauriers

et al. found increased student attendance, higher engagement, and more than twice the

learning in the experimental group. Figure 1 compares the results between the two research

groups (Deslauriers et al., 2011).
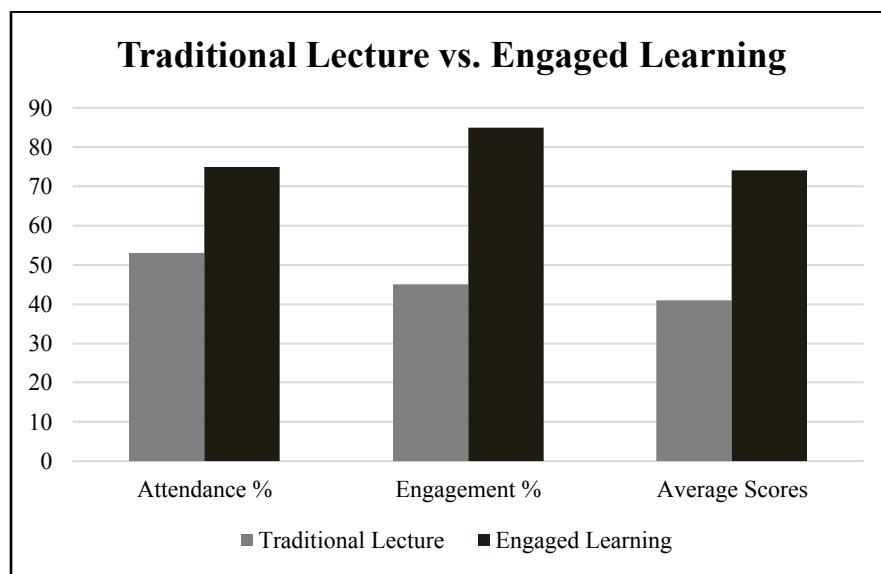
Figure 1. Comparison of a Traditional Lecture to Engaged Learning.

Levels of engagement through lecture can be increased by adding demonstrations,

technical gadgets, or open discussions to the mix, but there are more effective alternatives that

enhance the transfer of knowledge and skills to students. For community college students with

a wide range of learning aptitudes, faculty can increase student engagement and retention by

incorporating repetitive learning activities into their course designs. Compared to the traditional lecture, repetitive learning shifts control of learning from instructor to student. Instead of sitting passively, students can determine the ways they will interact with learning content, how frequently it is needed, and the assessment of their progress. Fears about missing a single lecture opportunity are alleviated by the assurance that important content will always be available at a time and location determined by the student. Providing opportunities for repeated reading, listening, and interacting are especially effective for mastering challenging concepts that require several interactive steps or higher levels of critical thinking.

For assignment work that would normally require students to participate in elaborate studying outside of class, faculty can provide students with opportunities to practice learning interactively, retrieve and verify the accuracy of what they're learning, and repeat the same interactions until a higher level of mastery is achieved. Karpicke and Blunt (2011) refer to this learning method as retrieval practice, which is an effective tool to promote conceptual learning. Through their research with 80 students in an undergraduate science class, they experimented with varying types of study session activities. These included basic study during a single session, repeated study during four consecutive study sessions, and a retrieval practice session. For the last session, students studied the text, practiced recalling their knowledge, re-studied the text, and recalled once more. Two weeks later, students were provided with a test that included verbatim questions, which assessed conceptual knowledge stated directly in the text and inference questions, which required students to connect multiple concepts from the text. For both types of questions, the findings of Karpicke and Blunt supported their theory that retrieval

practices enhance learning more effectively than other study methods. Figure 2 compares the

test results which indicate that retrieval practice was the most effective study method.
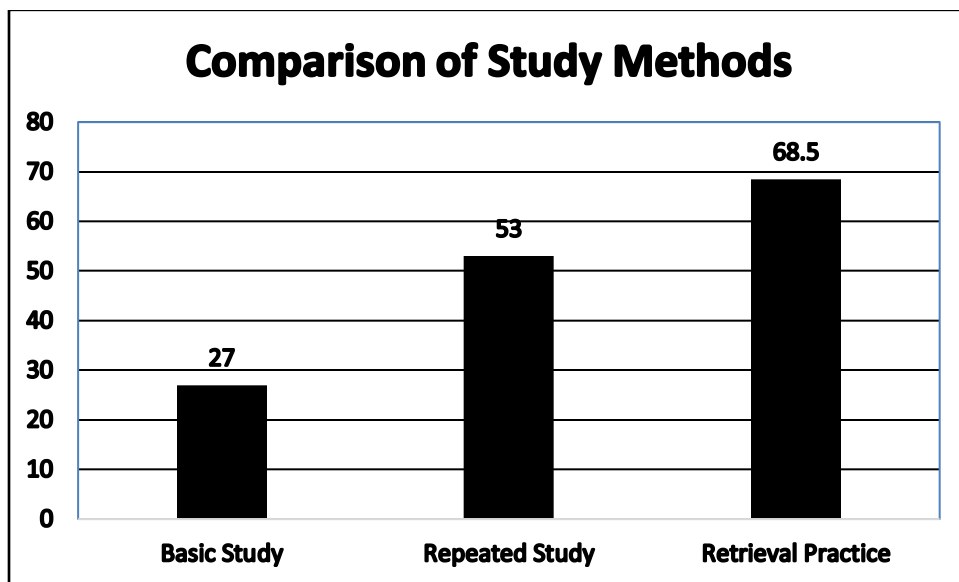
Figure 2. Comparison of Study Methods.

Repetitive activities and retrieval practice can be incorporated into many educational

methodologies that are student engagement-oriented. Some of these include experiential

learning, the flipped classroom, and blended learning. Wurdinger and Carlson (2010) indicate

that experiential methods involve the learning of content in which students have a personal

interest, need, or want. They suggest that faculty should actively involve their students "in the

learning process through discussion, group work, hands-on participation, and applying

information outside the classroom" (p. 2). According to EDUCAUSE (2012), the flipped

classroom model requires that in-class activities and homework elements of a course are

reversed. This allows students to learn fundamental concepts at their own pace, to repeat the

review of material as many times as needed, and to use different modalities that accommodate

a variety of learning styles. Blended learning provides a range of learning opportunities that combine the use of on-line media and classroom activities requiring the physical co-presence of a teacher and students using some form of technological communication (Friesen, 2012).

Other than standard classroom teaching and learning exchanges, faculty should consider a variety of options for communicating with students. They should include the most current, easy-to-access, and familiar communication options used by students outside of the classroom environment. In a VitalSource survey, 61% of students cited the ability to exchange instant feedback with professors as something that would improve learning (PRNewswire, 2015). Faculty communication preferences and parameters should be clearly stated to students in order to prevent misunderstandings and to clarify expectations. These parameters include the frequency of communication exchanges, anticipated response times, and days or times where instructor responses will be limited. Assisting students within a set classroom time and space is important, but expanding communication opportunities outside of the classroom when students have immediate issues can significantly enhance learning as it is occurring.

Faculty who provide student support by mentoring, coaching, and encouraging can positively impact student learning. The challenges students face in the classroom can be compared to the challenges of running a road race. In both scenarios, individuals may progress at different speeds with milestones to be celebrated along the way. If people progress through their journey, and no one is there to notice possible problems or to offer encouragement, it is much easier to stop participating.

Finally, activities that are engaging can result in information from students that further assist with retention. When students provide assignment reflections, they can see the value of

their learning. For instructors, the content from those reflections can provide valuable feedback and contribute significantly to assessment reporting.

PERFORMANCE MONITORING

Faculty who closely monitor the progression and completion of course activities will be better able to support students when they falter and to encourage students when they succeed. Course performance information that is easily accessible, pertinent, and that can contribute to successful intervention remedies can contribute greatly to student retention. In the VitalSource survey, 55% of students said, "Digital learning that personalizes their learning experience (i.e., gives teachers the ability to track student progress in real-time) would be useful" (PRNewswire, 2015, para. 2).

Student profile data used prior to the start of the semester can provide insight regarding barriers that have the potential to challenge learning, but students who are derailed while courses are in progress are equally vulnerable. Instructors can intervene by identifying students who are struggling to participate, communicating with them about potential causes, and directing them to campus support service areas. Assuming that students know where to get help when they need it is not guaranteed and even more importantly, students often need encouragement to take action. "Early alert" retention tools are currently being used by many institutions for intervention, but the tool name is inaccurate because warnings about poor student performance can occur at any time during the semester—early, in the middle, or later.

Leading indicators such as course attendance, assignment completion, and levels of student engagement can help faculty predict the probability that individual students will

complete a course. After the course is completed, a collective summary of student data results can be used to determine potential causes of inactivity and where slumps in learning require attention. Post-course information, which can accurately be called lagging data, can be used to make adjustments in assignment scheduling and to help determine where improvements to learning are needed in future classes.

Student self-monitoring of performance can happen when faculty provide easy access to results such as scores, grades, and meaningful assignment feedback. Research indicates that feedback is most effective when it is given immediately rather than within a few days and that immediate feedback can significantly increase comprehension and overall performance (Stenger, 2014). Faculty who withhold assignment results or delay providing feedback for several days are lacking in their accountability to students and are potentially contributing to attrition.

Monitoring course performance for effective student retention means that every contributor, including faculty, must be thoroughly and accurately evaluated. Traditional community college faculty evaluations use methods that may include in-class reviews and observations by students, academic deans, or peers. Unfortunately, the resulting data are often unrelated to retention, can be limited in scope, and may be subjective in nature. Faculty assessment, including self-evaluation and peer evaluation, can include how student profile data, student engagement activities, and performance monitoring activities are being used to retain students and help them to perform to their full potential.

SUMMARY

The information in this section answers research questions which seek ways to assist students with course completion and ways to promote greater student success in higher education. Proven retention theories support the ways faculty and staff at selected institutions of higher education can implement best practices. The implementation of a student profile system that provides meaningful data, the enhancement of student engagement activities, and the use of performance monitoring in the classroom provide more benefits to students and assist employees with effective and efficient student services. The utilization of expanded and pertinent student record data aids with the immediate diagnosis of student issues and provides expanded advising services. Increased classroom engagement activities enhance learning and contribute to course persistence. Faculty and student monitoring of course performance assists significantly with academic progression. The answer to the last remaining research question regarding the categories of innovations and technology tools available to assist stakeholders with retention will be provided in the next chapter.

CHAPTER 4: CLASSROOM STRATEGIES

INTRODUCTION

Based on the conceptual design mentioned in the previous chapter, physical design

strategies including the Student Success Profile (SSP), student engagement activities, and

interactive performance monitoring are revealed in this chapter using innovative and

technological solutions. The implementation of these strategies will be described in Chapter 5.

These strategies can be used with any course delivery method (i.e., in-class, hybrid,

online), for any course length (i.e., 16 weeks or accelerated), and with any instructional

methodology (i.e., traditional educational model or competency-based education [CBE]). Some

of the suggested technological solutions may be used for one or more student retention and

success strategies. Consideration should be given to the fact that this information is time

sensitive which means that recommended solutions are primarily applicable to the current year

of this publication (2017). While it is true that some technologies can evolve significantly over

time, many of these solutions will retain their best qualities and functionality making them

relevant for future use.

THE STUDENT SUCCESS PROFILE

The use of student education records maintained by higher education institutions is

closely regulated. Before data adjustments or changes in data distribution are considered, a

clear understanding of FERPA mandates will assure compliance with institutional practices and proposed changes that must be distributed to students annually. After this is complete, each institution will need to determine unique specifications as follows:

1. SSP data requirements for student retention and success.

2. How SSP data will be collected (input process).

3. How SSP data will be maintained, stored, protected, and secured.

4. Who will have access to SSP data (outputs).

5. What current or new technological resources or innovations can be used.

For the first specification above, the SSP Data Design list provided in Appendix A can be used as a guideline to determine individual student record data needed for the SSP student retention and success system. Some of these items will contain raw data (i.e., student data, academic information, placement testing results). Other items may be the result of calculations (i.e., total number of remedial courses completed, grade point average). SSP data will come from existing institutional student records and new data that will need to be provided through student input or through meetings with individual students. Bold items in Appendix A identify potential barriers or challenges to learning (i.e., first-generation student = yes, attended orientation = no). Items containing "X" values should be determined by each college to correlate with school policies (i.e., a GPA "X" value of 1.5 may indicate a student eligible for academic probation). Additional "X" values should be determined to identify other barrier issues (i.e., a full-time student working more than "X" [or 40] hours a week).

For the second specification regarding the input and data collection process for the SSP, several answers to key questions must be determined. For example, what technologies are

available that allow the input of data from external sources such as local high schools and other colleges? How and when should data from students and staff members be entered? Should faculty be allowed to enter and edit data? Should specified fields be protected from editing? What are the most efficient and convenient ways to input data? The Suggested SSP data entry list in Appendix B provides options to consider for SSP data entry.

The third specification will determine how the integrity and quality of SSP data will be assured. Discussions about measures that will be taken to verify data accuracy, that data are not duplicated, that data are free from contamination, and that data are protected from potential security breaches are essential. Some of these decisions will rely significantly on whether the physical data will be stored in-house or by an external third party.

The fourth specification will determine the parameters for accessibility to SSP data regarding who will have access to them, how they will be used, and students' rights regarding their content. FERPA mandates that this information be provided to students annually; however, it is recommended that the information should be updated annually and always be available to students through the campus website. Students who have convenient access to SSP information via a computer or through smart devices will be better informed about inhibitors to success, better able to take actions to address them, and thus progress toward their academic goals. Campus officials who are allowed access to SSP data should provide evidence that training has been received regarding FERPA compliance and institutional policies. Such training should emphasize the need to refrain from personal bias that could interfere with effective service to students.

Training will be vital for faculty who may not be familiar with the ways SSP data can be used to benefit students. Before classes begin for the semester and depending on how data are aggregated, faculty may be able to quickly identify students who may be at risk and seek to provide early assistance. In the first orientation week of the semester, faculty can administer a student survey which will allow students to verify the accuracy of existing SSP personal information as well as to allow the updating of data regarding potential barriers to learning. Instructors then can be notified immediately about updates in order to provide immediate assistance. During the semester, faculty can use SSP data to provide academic advising options to individual students and to groups of students seeking specific career pathways or majors. Persistence to the next semester can be better assured when faculty provide students with information about courses they need to take, assist them with course registration, and/or collaborate with other staff to assure that students are registered before the beginning of the next semester.

The fifth and final specification will be to evaluate and consider technological options. Data from existing campus systems such as student records will need to be input into the new SSP system. New computer and mobile friendly screen designs for additional data input and data retrieval will also need to be developed. Decisions about where to store, secure, and maintain the data will also be vital. Two essential options to consider are whether to develop a new system in-house using existing campus resources or whether to purchase software and services from an external third-party.

The in-house option will require a dedicated Information Technology Services (ITS) staff for the entire system analysis, design, and implementation process. The advantages for this

option include ITS familiarity with existing campus systems; using input from employees for screen design customization; and having direct control of data storage, maintenance, and security. The disadvantages may include having a limited number of available campus ITS development staff, limited storage capacity, and increased maintenance responsibilities. While the in-house option might be less expensive up front, in-house developers will still need to be paid for an estimated amount of time that can last longer than anticipated. Time for development and implementation could easily be delayed or take much longer than use of the third party vendor option. Rather than "reinventing the wheel," a ready-to-implement third-party software that has been tested, debugged, and placed in production by other institutions can be used to provide service to students more quickly. Additionally, the entire system could be housed off campus, thus freeing up existing ITS system requirements and adding an additional level of security. Table 7 summarizes the advantages and disadvantages of each SPP option.

Vendor products using data analytics are currently being developed and utilized to specifically target retention efforts in higher education and should be considered for SSP implementation. A dedicated amount of time should be used to make product comparisons and determine how specific features will meet the needs of an institution. Beckwith (2016) provides this short list of data analytic products currently being used at universities across the nation:

- Excelsior College, located in Albany, New York uses QlicView from Qlik for business intelligence and R open-source software for predictive modeling.

- At Washburn University in Topeka, Kansas, Tableau from Tableau Software is paired with the SPSS within the Institutional Research department.

- North of New York City, Rapid Insight is used at Sarah Lawrence College.

- At the University of Kentucky, in Lexington, SAP HANA from SAP is used.

Table 7: *Comparison of In-house and Third Party Vendors for the SPP*

	IN-HOUSE SYSTEM	THIRD PARTY VENDOR PACKAGE
Required Time to Implementation	Significant amount of time required for planning, analysis, development, implementation, testing, and support	Far less time required for possible data integration, implementation, testing, and support
Use of campus resources	Dedicated ITS employees would be required. Could be a problem if employees are limited. Additional staff, hardware or storage may need to be purchased.	If system is housed off-campus, no resources will be used. This frees up ITS employees to do other work.
Familiarity with campus systems	Very familiar which will help with a customized design.	Would require evaluation of campus systems.
System Testing	Debug using a pilot first, then implement large scale with more debugging and testing.	Debugged and testing on other campuses, ready for use.
System Maintenance and security	Housed on-campus requiring additional ITS resources and additional security measures.	Off-campus option which may free up ITS resources and provide more security.
Expenses	Funding will be needed to be dedicated expenses in the first year or two of development and with purchasing of additional storage. Generally less expensive during post-implementation. In-house will need to be paid for future maintenance and security.	Generally more expensive overall. Covers initial implementation services and equipment that would otherwise be purchased in house. Contacts may require annual maintenance fees for future years.

Textbook vendors are also joining the student data aggregation and analysis development effort. McGraw-Hill Education recently entered into an exclusive agreement with Austin-based data analytics provider Zogotech. At Odessa College in Texas, implementation of this software led to an in-class retention rate that increased from an average of 83% in 2010 to

more than 94% in 2014 (McGraw-Hill, 2016b). A sample of the Zogotech student profile screen

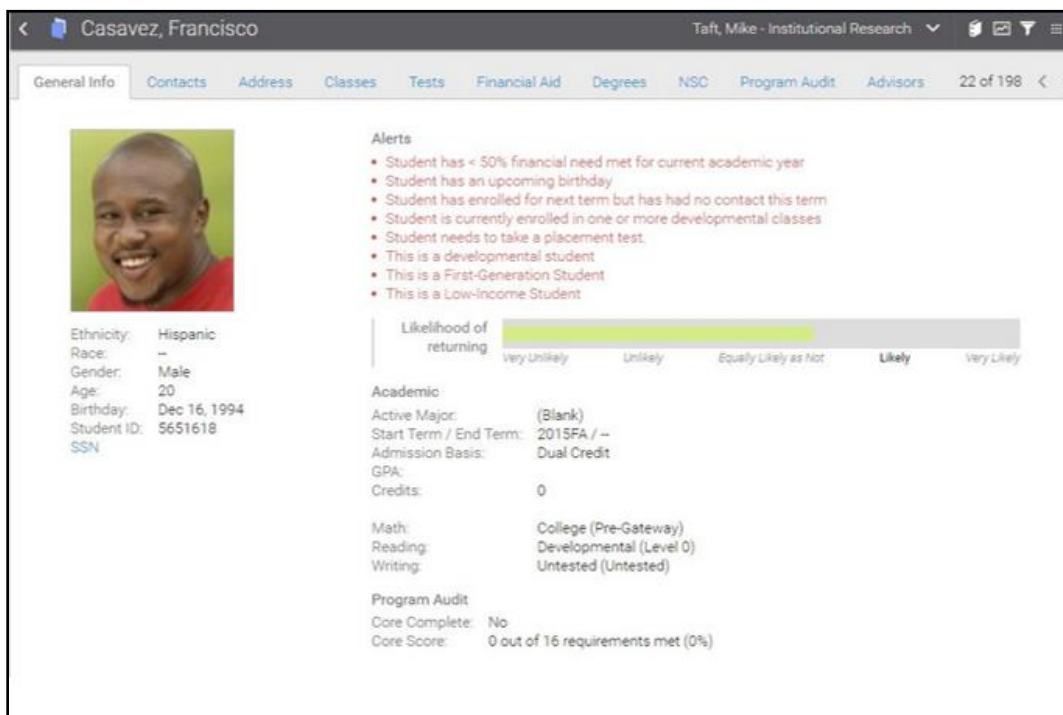is provided from the McGraw-Hill web site in Figure 3 (McGraw-Hill, 2016a).

Figure 3. ZogoTech Student Profile Example Screen.

STUDENT ENGAGEMENT

Students are more likely to be retained and to maximize their performance when they

are actively involved in their learning experience (Karpicke & Blunt, 2011). For community

college students whose only connection to the campus may be the classroom, faculty have the

opportunity to provide a number of engaging activities. This student engagement model will

suggest using learning management software (LMS) and videos to motivate learners and

enhance the teaching and learning experience. Technological suggestions will also be made to

improve critical communication for students who are completing homework, learning course material, and completing assignments independently.

Using Learning Management Software

The first essential tool of engagement requires faculty to use LMS also referred to as a course management system (CMS). Originally LMS was used exclusively for on-line course delivery, but as it evolved and its usage increased, it proved to be equally effective for in-class and hybrid course delivery. The LMS products most widely used by institutions of higher learning today include Blackboard, Moodle, Canvas, Brightspace, and Sakai (Fenton, 2016).

Student-to-student engagement can also be encouraged by providing socialization activities such as LMS "ice breaker" activities using discussion boards and peer project sharing and evaluating. Faculty can also encourage the use of social media (e.g., Facebook, Twitter, Snapchat and LinkedIn) or other smartphone apps. Students should be encouraged to establish e-connections with other students, faculty, and campus organizations using social media. The more intensely students are engaged and involved in their own education, the more likely they are to do well, be satisfied with their educational experience, and stay in school (Pascarella & Terenzini, 1991).

Embedding Videos within an LMS

For the purpose of student engagement, well-designed LMS courses provide opportunities for students to use repetitive learning activities. Specifically, students can watch and interact with videos that are motivational, informative, and allow for self-assessment of gained knowledge. The use of educational videos in higher education is increasing along with

advancements in computing devices and enhanced network bandwidth speeds. Content

options are abundant as well as the range of video options that can be provided. Faculty can

replace the control of presenting a standard lecture with the control of selecting or creating

video content. Additionally, students gain a significant amount of control as they determine

when, where, and how they will learn. Working with video will require training, but faculty can

select options that are easy, intermediate or advanced. In a VitalSource survey, 61% of students

said homework that is more interactive and that contains elements such as video would

improve learning (PRNewswire, 2015).

A basic video sharing technique allows faculty to embed codes or paste web links from

existing web sites into the LMS or into slide presentation software products such as PowerPoint

(PC or Mac compatible), Google slides (web based), Prezi presentation (web based), or Keynote

(Mac compatible). These sharing techniques can add value to course content by introducing

students to real work environments, providing interviews with field specialists, and extending

learning beyond campus boundaries. Some LMS systems provide the option for faculty to track

the number of times a video has been watched by students which can verify perceived student

value. If tracking statistics are low, and success results remain unchanged, faculty should

determine if more engaging video options might be available.

Faculty who create new video content are limited only by their creativity. Short videos

can be used to introduce a course, describe an assignment, or provide encouragement. Longer

length videos are helpful for students with various learning abilities and can include past in-

class lectures, descriptions of complex concepts, and solutions for solving challenging problems.

If there is an opportunity for training, students can also be encouraged to create videos

individually or in groups that are peer-shared or submitted as an assignment. All of these

examples require the use of a camera (many smart phones have them) the videographer (often

the instructor or student), and the use of a video hosting account such as YouTube. Smart

phone apps that allow the instant sharing and live streaming of videos include Facebook Live,

Periscope, WhatsApp, and WeChat. Many of these options also provide ways to save the videos

for later sharing.

Advanced video production that further enhances engagement can show computer

activity with screen shots, voice narration, mouse click movement, and screen annotations. This

is very helpful for demonstrations that assist students with LMS activities (i.e., posting to a

discussion board, navigating the LMS, or submitting assignments) that require the use of the

web, or the demonstration of specialized software required for a course. Some of the video

creation software options include the embedding of quizzes between short video intervals. If

the software allows, additional learning can occur when faculty provide students with

specialized feedback for each quiz answer selected by students. Advanced video production

software options include Movavi, Camtasia, Adobe Presenter, SmartPixel, Snagit, and

Screenpresso Pro. Many publishing companies also provide interactive videos in their ancillary

materials.

These video technologies can be characterized by their level of difficulty to learn, the

activities involved, and the required technical resources as shown in Table 8.

Table 8: *Video Creation Design Considerations*

Level of Difficulty	Activities	Requirements
Easy	Copy/Paste video web link. Embed video share code. Provide in LMS content area. Provide in slide presentation software.	Resources such as Youtube, TedTalk, and others. Use in LMS or Slide software including PowerPoint, Google slides, Prezi, Keynote.
Intermediate	Create basic video content. Perform limited editing. Upload video to video hosting site. Copy/Paste or embed video into LMS or slide presentation software.	Video camera, videographer, video management account such as YouTube. Free video editing software such as Youtube, Windows Movie Maker, Movavi for Mac. Free smart phone apps such as Facebook Live, Periscope, WhatsApp, and WeChat.
Advanced	Create interactive video content Add voiceover. Edit video. Upload video to Youtube. Copy/Paste or Embed video into LMS or slide presentation software.	Specialized software such as Camtasia, Adobe Presenter, SmartPixel, Snagit, and Screenpresso Pro. Computer microphone (optional but recommended for voice overs), video management account (YouTube).

Videos for students must comply with the Americans with Disabilities Act (ADA) that "prohibits discrimination against individuals with disabilities in all areas of public life, including jobs, schools, transportation, and all public and private places that are open to the general public" (ADA National Network, n.d.). To comply with the ADA, the following guidelines are suggested: slow and steady camera movements; slow and clear speech with minimal background noise; text with clearly readable fonts, effective color contrast, limited movement and the use of bright font colors; and closed captioning with accurate transcription and timing. Research requiring adherence to ADA compliance for video production is widely available on the web and is highly recommended.

Video production training for faculty can be provided using a variety of resources. Peer training from other faculty, structured training through on-campus technology and innovation centers, and professional development opportunities are all viable options. Many students are self-taught and are familiar with video creation, but in order to promote classroom engagement and provide the same opportunities for all students, training opportunities on campus would be valuable and beneficial.

Retrieval Practice and Interactive Software

Another advanced and very engaging option for students provides the opportunity to use retrieval practice for an individualized experience. Students in high-enrollment courses are provided with one-on-one assistance that faculty would not physically be able to provide. Using retrieval practice tools has the potential to change the way instructors administer their courses. Time spent for lectures, assignments, and tests can instead be spent selecting student engagement tools, enhancing course design, and monitoring student retention and success.

Retrieval practice is supported through the use of interactive software which allows students to experience customized learning specific to their progress and mastery of content. Through computerized simulation exercises, immediate feedback, and immediate grade results, this learning experience also known as personalization, is unique, highly focused, and tailored to each student (EDUCAUSE, 2016). This software is able to track large amounts of performance data and analytics which contribute to individualized learning pathways for large numbers of students.

Interactive software is available for a wide range of academic specialty areas, and it requires a significant investment in development. This specialization software exceeds what many higher education institutions can afford to spend on development. Fortunately, several publishing companies see this as a growth area and an enhanced alternative to classes that only use print text. Publishing companies are making a wide-range of brand name technology products available for higher education each year. For example, Pearson PLC offers Mylab for over 70 academic areas, Cengage Learning Inc. offers SAM and Aplia for over 11 academic areas, McGraw-Hill Education offers ALEKS, and Wiley offers WileyPlus. These publishers are eager to share their products with interested institutions and in some cases, will provide training. Academic stakeholders, including faculty who make textbook selections, should be aware that these products can be expensive and can create an additional burden on the limited budgets of students. For this important reason, faculty should seek ways to negotiate and leverage affordable pricing options being offered for various components such as print texts, e-texts, online content, and access codes for specialized software.

Enhanced Communication

For engagement that involves communication with students, faculty have many options. One-way communication that provides instructions or announcements to a group can be shared with campus email, phone calls and LMS-based announcements, assignments, and messaging. The drawback when using these communication tools is the lack of message receipt verification. This can be an even more serious problem when messages are personalized or urgent.

Enhancing communication through mobile phone texting provides the opportunity to use a current technology that is efficient, easy to use and familiar to users. For example, the REMIND app, widely used in K-12 education to keep parents and students informed about homework, can also be used effectively in higher education. Phone numbers remain private, and codes are provided to students so they can be grouped by a course that the instructor designates. Because it is compatible with mobile phones and computers, instructors can use this app to create, copy, paste, and send messages to groups or individuals quickly and conveniently. Better yet, students are able to send messages, screenshots, videos, and emoticons that are more likely to receive an immediate instructor response. Faculty can consider using group and individual text messaging in creative ways that include providing encouragement, acknowledging excellent performance, or, as the name of the app implies, reminding students about deadline dates, class meeting time adjustments, or registration activities. Other group texting apps to consider include Facebook messaging, What's app, WeChat, and TextAim.

Faculty can make productive use of their office hours by providing students with specific times for video or audio teleconferencing sessions. A group session can be conducted where individual students can ask questions that might be of benefit to the larger group. This same group session can be recorded as a video that can be shared with other students for viewing at any location and at any time.

There are several teleconferencing software options to consider. Teleconferencing may be a built-in LMS feature or it can be downloaded for free (UberConference). Many campuses

provide robust teleconferencing options such Adobe Connect or Skype that require providing students with a phone number in order to connect.

PERFORMANCE MONITORING

To monitor the progress and performance of students as they are taking courses, data generated from student surveys and LMS resources can be extremely helpful. Students who have mobile phones can also receive LMS alerts when performance data are updated.

Because student attendance in the classroom is mandatory, faculty can administer non-anonymous student surveys in the first orientation week to assure that data added to the SPP will be current. This allows campus stakeholders and faculty to collaborate in assisting at risk students or to direct them to support services areas on campus. Using the SSP to retrieve survey data would be ideal as urgent barriers to student success can be immediately viewable by key campus stakeholders. If the SSP isn't an option, free survey tools such as Microsoft forms, Google forms, or Survey Monkey are effective.

LMS grades provide an effective way to monitor retention through leading indicators and to monitor success through grade evaluation. Leading indicators, which can be evaluated by faculty to predict future student success or failure, include last LMS login date, last submission of work date, and grade results. Faculty can keep students informed about their retention status by adding a "red flag" field to LMS grades. If an underperforming student reaches "at risk" status, a "Y" can be added to the field. A null or blank red flag field indicates an "all clear" or no issues. Because LMS grades are frequently checked by students, the use of this field allows for self-monitoring and makes them aware that their instructor is also monitoring.

Faculty can also add another LMS field, not viewable to students, that includes individual monitoring notes such as the number of red flags a student has received during the semester, their risk level, and the last faculty contact date.

Anonymous student surveys can also generate valuable feedback to instructors that can reveal truthful student viewpoints. Providing these surveys also sends a nonverbal message that student opinions are valued. During the semester as assignments are completed, brief surveys that contain multiple-choice questions and short answer spaces can verify learning outcomes. After the course is complete, a more extensive survey can retrieve student data regarding the effectiveness of retention, engagement and performance monitoring tools. Because the results of these surveys are related to specific course activities, the use of Microsoft forms, Google forms, or Survey Monkey are effective options for faculty to consider.

At the end of a semester, after final grades have been calculated, instructors can use LMS grade data, which can be downloaded to a spreadsheet format, using Microsoft Excel or Google sheets, to identify lagging indicators that measure student retention and success for each course. Course completion data can be used to generate retention percentages, and grade distribution data can be used to generate student success rates. For faculty self-assessment, targeted benchmarks or percentages can reveal the effectiveness of retention efforts and can be compared to previous semester data to identify performance trends and/or areas where improvements can be made. For institutional assessment, the Successful Course Completion Ratio (SSCR) mentioned in Chapter 2 can be used to identify how well students who enrolled in courses completed them.

LMS training and survey administration can be provided in the form of peer training with other faculty, structured training from campus Innovation centers, and other professional development opportunities. Collaboration with campus IR and ITS areas can assist with providing course-specific student performance data for evaluation.

SUMMARY

The information in this chapter answers the research question regarding specific innovations and technology tools available to assist stakeholders with retention. Student Success Profile (SSP) data analytics can be built in-house or purchased from existing vendors. Student engagement in the classroom can be promoted through the use of a campus-wide LMS, interactive videos, personalized software, and enhanced communication using mobile phones and teleconferencing. While students are enrolled in classes, performance can be effectively monitored using surveys, LMS grades, and faculty self-evaluation. The steps required for the successful implementation of one or more of these retention and student success model strategies are provided in Chapter 5.

CHAPTER 5: MODEL IMPLEMENTATION

INTRODUCTION

Several steps are required for the successful implementation of one or more of the retention and student success model strategies. Kotter's (Kotter International, 2017) 8-step process for transformational change provides a framework to use as a guideline (Figure 4).
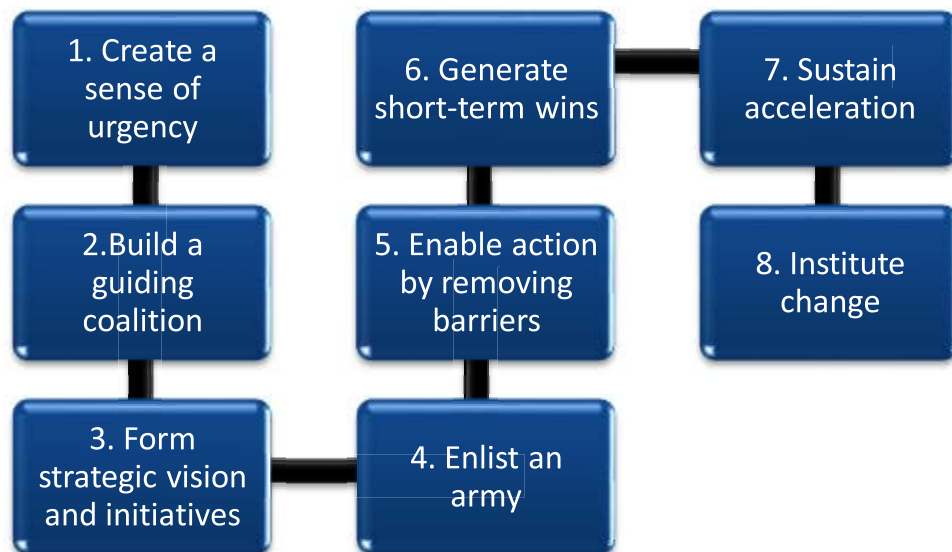
Figure 4. Kotter's 8-Step Process for Leading Change.

The entire process will require gathering interest and buy-in from key stakeholders for the purpose of creating a sense of urgency, building a coalition to lead the effort, forming a strategic vision with measurable outcomes, enlisting a volunteer force of people ready to drive

change, addressing anticipated barriers to change, generating short-term wins, sustaining system acceleration, and instituting the change.

CREATE A SENSE OF URGENCY

Initial interest in model implementation can be generated by discussing it with key student services administrators and faculty leaders. If there is enough momentum, consideration should be given to using Kotter's first recommended step, which is to create a sense of urgency for change which is a "significant opportunity as a means for exciting people to sign up to change their organization" (Kotter International, 2017, para. 6).

One turn-key solution can be provided by using resources from the Community College Completion Corps (C4). Sponsored by the Phi Theta Kappa (PTK) Honor Society, this is a student-led initiative formed to raise awareness about the importance of college completion (Community College Completion Corps [C4], 2017). A C4 press toolkit provides materials that support the effort to implement campus campaigns to invite campus stakeholders to participate in completion activities. Honors students in PTK have the opportunity to serve in important leadership and mentoring roles through their participation.

BUILD A COALITION

Kotter's (Kotter International, 2017) second step—building a guiding coalition, will generate the power and energy to lead and support a collaborative change effort. The establishment of a small cross-functional student success team comprised of campus administrators, staff, and faculty will be essential to the leadership effort. This group will champion the use of the model through a deliberate campaign and, through their service,

demonstrate the benefits of employee and student collaboration. Their role in promoting the

campaign will be vital as individual team members, using a variety of engaging communication

formats, can share the message with campus stakeholders. Because the implementation of this

model provides direct service to students, they should be included in some of the decision-

making and serve as the driving force behind the campaign.

Support and approval to move forward with the planning and analysis of the student

success model will be required from senior college leadership. Specific approvals will be needed

from administrators who oversee areas that will be the most affected by model

implementation. These areas will include academic, student services, financial resources,

Information Technology Services (ITS), and Institutional Research (IR). Final approval will also be

required from the college's Board of Trustees.

FORM THE VISION

Kotter's (Kotter International, 2017) third recommended step—forming a strategic

vision, will help to steer the change effort. The student success team can evaluate the student

model to determine which components can be identified as initiatives to help create the vision

statement.

For vision development and to monitor the effectiveness of the student success model,

the Deming PDSA continuous improvement cycle (plan, do, study, and act) is recommended

(The Deming Institute, 2016). The PDSA assists with initial planning, model implementation,

performance evaluation and the application of improvements to sustain the effort (see Figure

5).
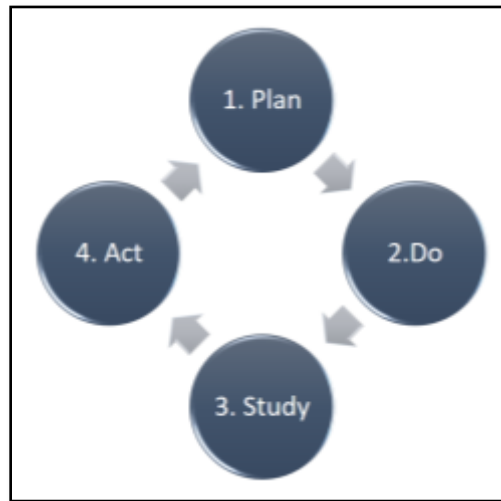
Figure 5. Deming's PDSA Strategy for Continuous Improvement.

During the "plan" step, performance goals or success metrics are established to predict

model effectiveness. Traditional institutional retention statistics can be considered in this step

as well as Successful Course Completion Ratio (SSCR) statistics for individual students in the

classroom. Both of these metrics will provide an expanded and more accurate view of model

results. During the "do" step, success model components are implemented. The "study" step

requires comparing performance goals to the actual performance results to measure the

validity of the model and to identify areas for improvement. Success metric data can be

retrieved from IR and from faculty. The "act" step closes the cycle, integrating what was

learned by evaluating the entire process. These four steps are repeated as part of a continual

improvement cycle which sustains the student success model.

The student success team should use the vision statement and the PDSA components to

develop the message for the promotional campaign. The student success model has the

potential to invoke transformational change but it may not be an easy sell. The messaging will

need to be well-crafted, persuasive, and frequently promoted during the first year. Consideration should be given to using engaging promotional tools that are also used by the student success model, such as videos, to demonstrate the effectiveness of engagement. Employees and students who will be using the student success model will need to clearly understand the urgency of its use, the benefits it provides, and how the institution will support those who use it.

The research provided in the previous chapters of this work can be used to build campaign messages for target audiences. Although it may not be new information, some administrators may benefit from becoming more aware of current statistics regarding declining enrollments, rising college expenses, the competitive advantage community colleges provide, and the financial advantages of retaining students. Educators may benefit from a clearer understanding about student attrition causes and the benefits of student persistence in the classroom. For employees and students, the need for increased access to student data as well as the activities that provide immediate student assistance should also be emphasized.

ENLIST AN ARMY

The fourth Kotter step, which is to enlist a volunteer army, serves to "raise a large force of people who are ready, willing and urgent to drive change" (Kotter International, 2017, para. 9). Using the C4 tools mentioned earlier, the student success team could collaborate with PTK to schedule several campus-wide activities that will contribute to the student success campaign. For students, these can include events where the C4 vision is promoted and completion commitment cards are signed, workshops focusing on campus support services,

essay contests that emphasize the importance of completion, and celebrations to acknowledge students reaching completion goals or milestones. For faculty and staff, these can include workshops such as "Barriers to College Completion," activities where student completion experiences are shared, and opportunities to serve as mentors or tutors for at-risk students (C4, 2017).

ADDRESS AND REMOVE BARRIERS

Kotter's (Kotter International, 2017) fifth step—enabling action by removing barriers, may be very challenging. The goal is to remove anticipated obstacles and seek ways to change the factors that pose threats to the achievement of the vision. It may be difficult to anticipate what all of these barriers might be, but addressing funding issues and attitudes of resistance are two places to begin.

The spending of community college revenue at any institution is a top priority, and administrators with limited financial surpluses may have fears about investing in cutting-edge technologies perceived to be risky. For that reason, details about project spending will need to be accurately estimated and very clearly understood. The student success team will need to collaborate with senior Information Technology Services (ITS) leadership to create a thorough cost and benefit analysis to determine economic feasibility. To determine the future date when projected benefits will outweigh estimated costs, or the total cost of ownership (TCO), calculation software is available. Amazon Web Services (AWS) provides a web-based TCO calculator generating a graphical display of results to share with others (see Figure 6).
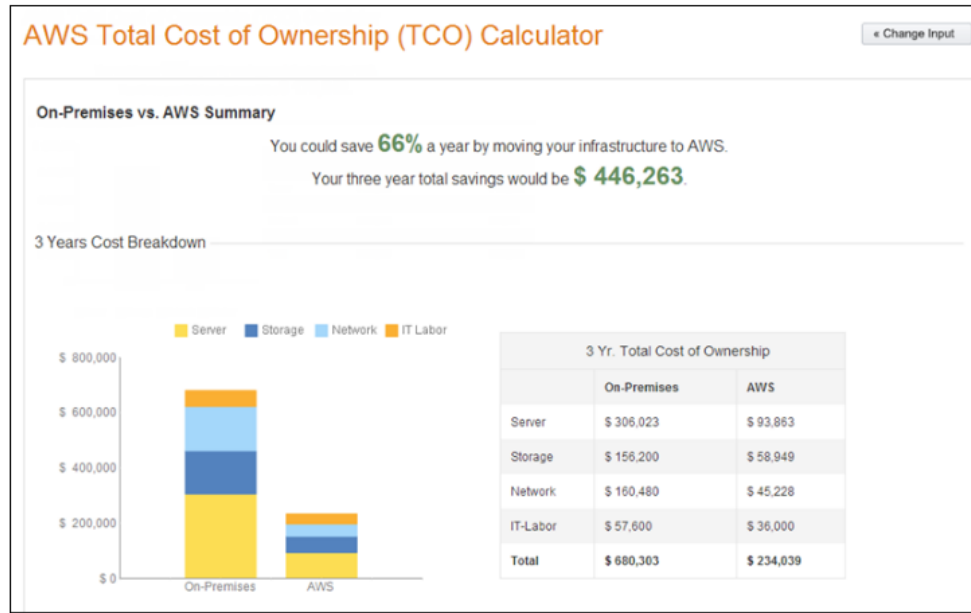
Figure 6. Amazon Web Services (AWS) Web-Based TCO Calculator Screen Result.

The TCO forecast is critical and should also include financial details for two scenarios—one for in-house development and maintenance and the other for third-party vendor purchase and maintenance. After its completion, additional approvals will be needed from senior college executives and the Board of Trustees.

Benefits of the model may not require much persuasion, but the acceptance of change and the use of new technologies may generate resistance. Employees who feel overwhelmed by the current demands of their work may not feel they have the time to learn something new, and/or they may not have the desire. Employees and students may not feel comfortable with a larger group of employees, such as faculty, having expanded access to their academic information. Preparing for these concerns and executing appropriate and professional responses will contribute to the success of model implementation.

Some faculty may offer various reasons why student improvements aren't needed, aren't required, and won't be supported. For these faculty, the message about assisting students may have less impact. Some faculty may respond more favorably to messaging that addresses personal benefits such as fewer cancellations of unfilled course sections, greater assurance of individual teaching schedules, and the sustaining of academic programs. They might also need to be informed that their lack of involvement may result in what other colleges have already experienced—the reduction of campus programs and departments, the elimination of jobs, and the closing of campuses.

To address these attitudes, employees and students will need to know that support systems are available. Training to use the LMS more efficiently and training for the use of the SSP should be provided to students, employees, and faculty. Training for technical tools that must be developed or used to enhance engaged learning should also be provided to faculty. Training can be provided through free learning communities where groups who share common academic goals meet to collaborate regarding ways to improve teaching and learning. Training can also be provided through on campus resources such as teaching and learning centers or professional development day sessions. Off campus options include workshops or conferences. Faculty can additionally be provided with incentives to receive training by offering stipends, release time, or professional development funding.

GENERATE SHORT-TERM WINS

After the system has been implemented, the results of its success will need to be measured and shared. Kotter's (Kotter International, 2017) sixth plan step—to generate short-

term wins, supports this idea by consistently producing, tracking, evaluating, and celebrating small and large accomplishments that can be correlated to results. The achievement of Deming cycle performance goals established in the third step can be celebrated using Community College Completion Corps (C4) promotional activities mentioned earlier. These could include rallies where the C4 vision is promoted, workshops that focus on the results of successful retention efforts in the classroom, and mini-celebrations to acknowledge students reaching completion goals or milestones.

SUSTAIN ACCELERATION AND INSTITUTE CHANGE

Kotter's (Kotter International, 2017) seventh step—to sustain system acceleration, can be accomplished after system strategies have been in use long enough to determine effectiveness. Using performance data, the student success team can make recommendations about the removal of model mechanisms that do not align with the original vision or are not productive. They can also make suggestions for ways to update the model with improvements that align with the vision. Those improvements can include promoting and developing employees who can implement the vision and "reinvigorate the process with new projects, themes and volunteers" (Kotter International, 2017, para. 12).

The last of Kotter's recommend steps is to institute change by articulating "the connections between the new behaviors and organizational success, and develop the means to ensure leadership development and succession" (Kotter International, 2017, para. 13). The metrics used to measure and celebrate the success of the model can be used to create documentation that articulates how an increase in student course persistence is contributing to

the college mission. To assure continual success, leadership and membership on the cross-

functional student success team will need to be sustained.

SUMMARY

By following Kotter's (Kotter International, 2017) 8-step process, one or more of the

retention and student success model strategies can be successfully implemented. Literature

limitations, suggestions for future research, and assumptions regarding successful

implementation of the student success model are provided in Chapter 6.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

INTRODUCTION

This chapter will begin by providing a small portion of research and insight into student retention and success. Limitations of this literature, suggestions for future research, and assumptions regarding successful implementation of the student success model are also provided.

SMALL SCALE CLASSROOM RESEARCH

Methods to test the effectiveness of the retention tools previously described have been pursued on a small quantitative scale for review in this chapter. Some of the student success model components mentioned in Chapter 4 were integrated into my courses through a Blackboard LMS. They included a first-week survey, which collected student information about academic goals and barriers to learning; interactive videos to introduce assignments, encourage and motivate students; grade performance tracking measures such as the red flag column and grade assignment feedback; and enhanced communication using text messaging.

With approval (see Appendix C), the following statistics were provided by the Institutional Research and Effectiveness staff at Lincoln Land Community College (LLCC). During the fall 2014 to fall 2016 semesters, the researcher taught four courses including freshmen level Computer Applications (In-Class and On-Line), freshmen level Introduction to Computer

Programming (On-Line), and sophomore level Systems Analysis (On-Line). Figures 7-10 provide

enrollment totals for students who began and completed each course. Fluctuations in starting

enrollments and retention are shown from semester to semester. A change in the width of the

distance between the two graph lines indicates a change in retention. In Figure 7, for example,

during the spring of 2016, there is no distance between the two lines for starters and

completers indicating 100% retention. The most significant retention improvement over the

five-semester time period is shown in Figure 9 for Introduction to Programming (On-Line)

where demonstrative videos showing software use were added to the LMS in spring 2016.
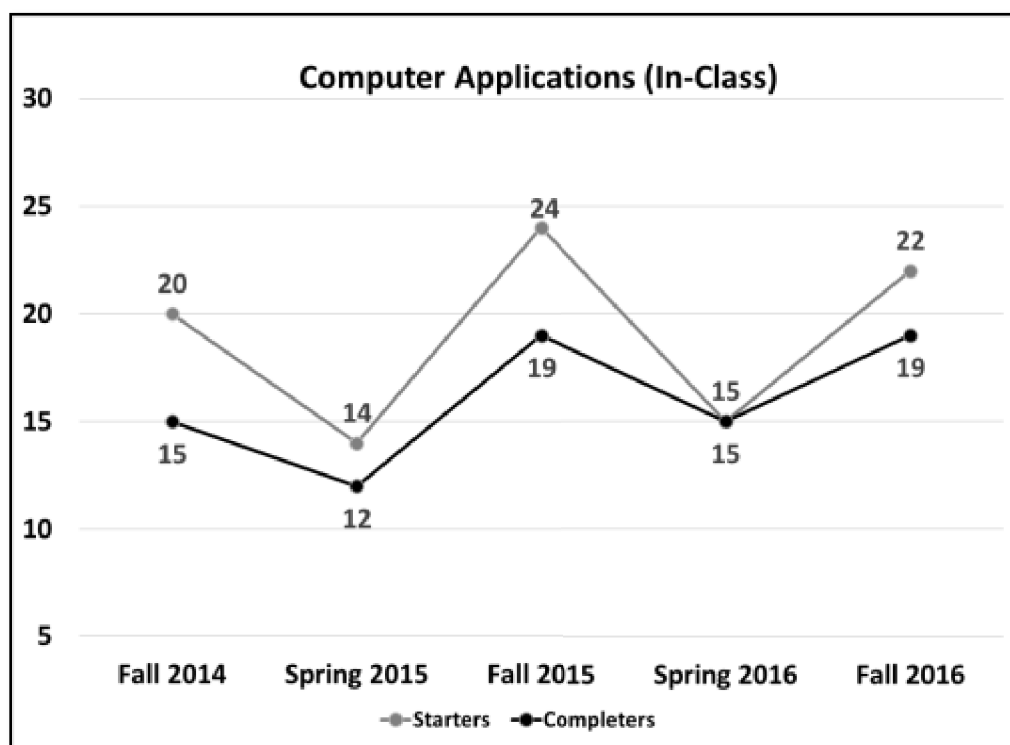
Figure 7. Retention Enrollment Totals for Computer Applications (In-Class).
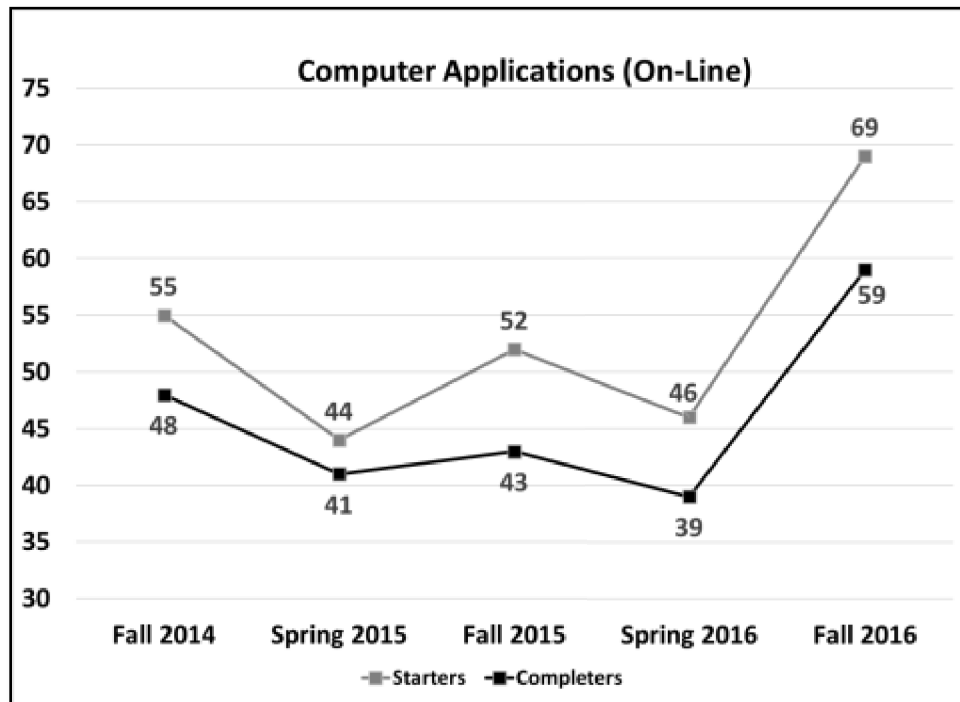
Figure 8. Retention Enrollment Totals for Computer Applications (On-Line).
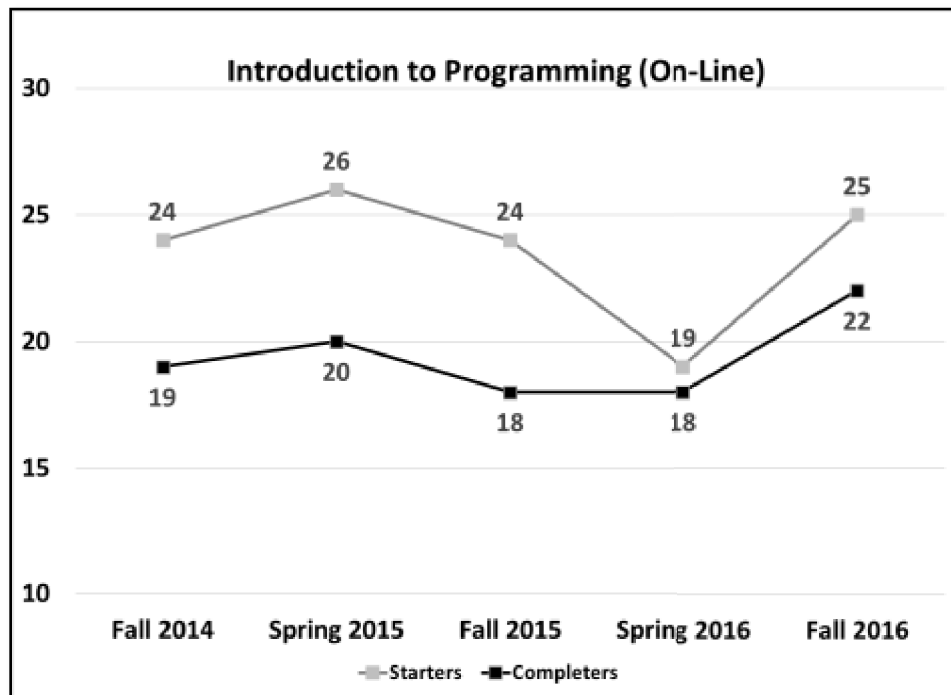
Figure 9. Retention Enrollment Totals for Introduction to Programming (On-Line).
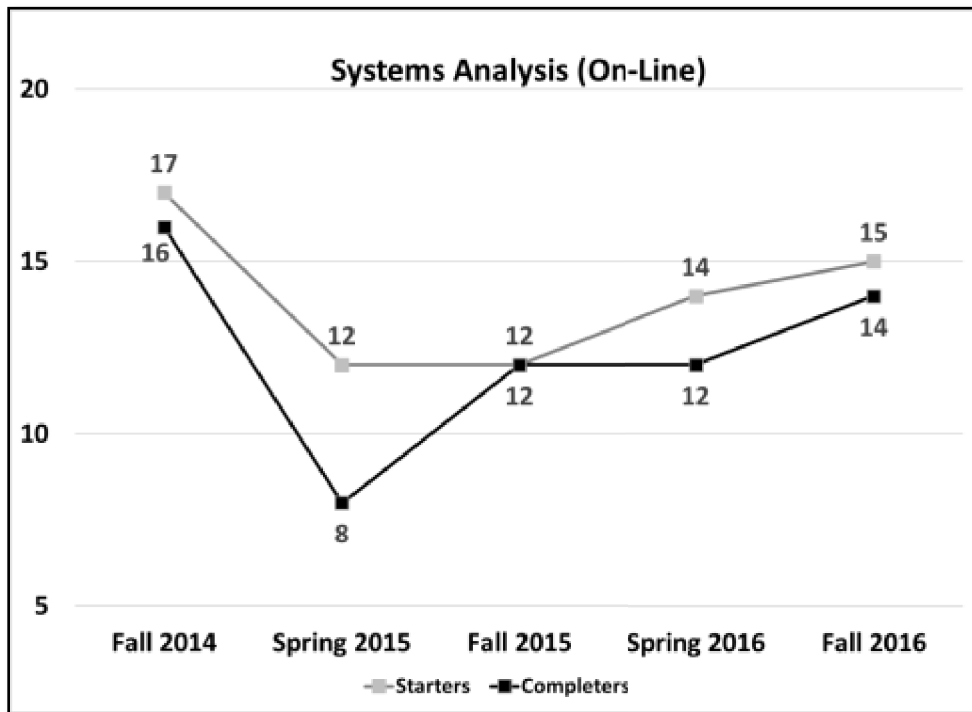
Figure 10. Retention Enrollment Totals for Systems Analysis (On-Line).

Retention rates for all classes are compared in Figure 11. Note the major increases from spring 2015 to spring 2016 for Computer Applications (In-Class), Introduction to Programming (On-Line), and Systems Analysis (On-Line). During this one-year period, the number of student retention tools mentioned at the beginning of this chapter gradually increased for all classes. For the fall semester of 2016, retention rates for all classes were above 85%, which matched closely with the retention rates for all LLCC classes in fall 2014 (85.9%) and fall 2015 (87%) (Lincoln Land Community College [LLCC], 2016).
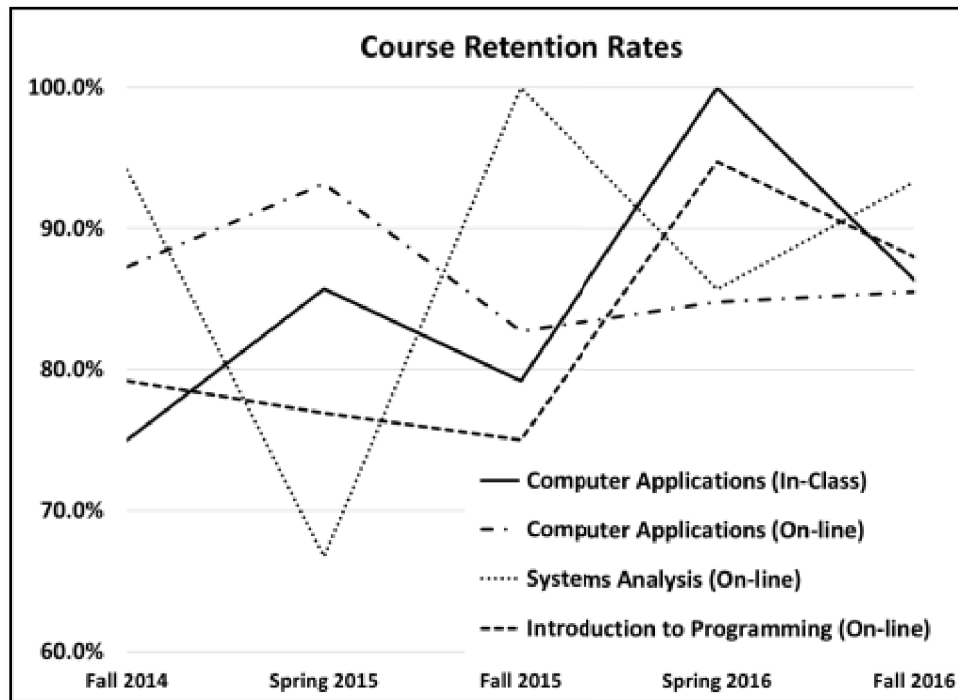
Figure 11. Course Retention Rates for All Classes.

The success rate data shown in Figure 12 shows the percentage of students who completed and finished these same courses with a grade of A, B, or C. An increase in improved performance levels from fall 2014 (with the lowest percentage of 60%) to fall 2016 is shown (with the lowest percentage of 78%).
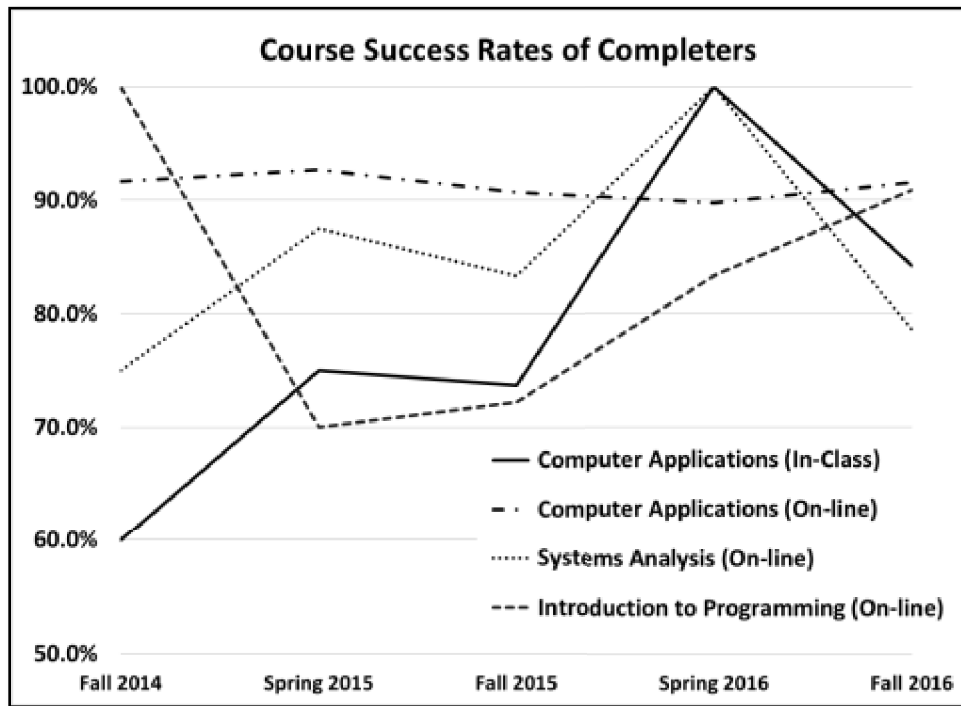
Figure 12. Course Success Rates for Students Who Completed With an A, B, or C.

A results comparison of Computer Application (In-Class) to all other courses revealed

notable findings. For Computer Applications (In-Class), individual tutoring was provided in lieu

of a formal lecture; however, both the in-class and on-line sections of Computer Applications

provided the same surveys, LMS content, interactive videos, and simulation software. Figure 11

illustrates that from fall of 2014 to the fall of 2016, retention rates for Computer Applications

(In-Class) increased by 11.4%—a much higher increase than the other three courses. Figure 12

shows that from fall of 2014 to the fall of 2016, student success rate results for Computer

Applications (In-Class) increased by 24.2%—a much higher increase than the other three

courses. This indicates that the increased usage of student success tools may have had a

greater impact for the students taking courses in-class than for those taking courses on-line.

This combination of data describing retention enrollments, retention rates, and success measurements provides a comprehensive view of overall student success in the classroom. A recommendation for future research would be to provide a more in-depth evaluation of specific variables that contribute to the statistical fluctuations being shown.

LIMITATIONS

Retention, attrition, completion, and persistence research is extensive; however, it predominantly includes a wide-ranging body of work that is at the national, state, university, and institutional levels. While this research is wide-ranging, it has not yet contributed to results that have been recognized by retention experts as significant. By narrowing the scope of study to the classroom where attrition is most likely to occur, final results can be aggregated at the course section level, departmental level, or institutional level. Rather than evaluating highly selective universities serving students who face fewer barriers to success, the research scope included less selective or open-door community college classrooms serving students who are challenged by higher levels of success barriers.

FUTURE RESEARCH

Opportunities for retention and success research to continue at the community college level and to focus specifically on the classroom are abundant. Further, the research lens could focus on specific academic areas such as a specific department, a departmental program, or a course within a specific field of study. For the purpose of measuring retention, non-academic research could study the influence of student activity groups such as service groups, special interest clubs, or other groups that target at risk students.

ASSUMPTIONS AND RECOMMENDATIONS

The ability to implement one or more of the student success model components institution-wide may understandably be limited by a lack of funding. For this reason, the development of an accurate cost and benefit analysis is crucial.

A campus-wide initiative that requires a collaborative effort to enhance student retention in the classroom has the potential to significantly transform a campus culture; however, it may take several years for changes to occur, to be acknowledged, and to be accepted by the masses. Resistance to change should be anticipated and addressed though Kotter's (Kotter International, 2017) suggestion to enlist a "large force of people who are ready, willing, and urgent to drive change" (para. 9). Respected employees from various departments leading small retention action teams comprised of cross-functional employees can effectively address classroom retention issues (i.e., assisting with student barriers, gathering student data for the SSP, training to use new technologies).

To enhance class curriculum, staff and faculty can develop and sustain partnerships that promote student engagement in the classroom such as speaker presentations or day trips. This curriculum infusion practice provides the benefit of enhancing the student experience and build stronger employee relationships.

For faculty, it may be necessary to prove the effectiveness of student success components through experimentation with low volume courses or small pilot test groups. Fortunately, elements of these tools can be used in the classroom on a small scale. Also, the research described at the beginning of this chapter required the use of tools that many community colleges are currently able to provide or to support. These include LMS software

training through an Innovation Center, free student survey tools, free mobile phone apps, application software, or on-line resources.

To ensure the success of the model, implementation support systems must also be in place. Training for all participants—including faculty, employees, and students, will be required. Centers for teaching and learning may need to expand the options they offer, to rely less on training that is offered at specific times and locations, and to develop more on-line and conveniently accessible training that promotes engaged learning.

Consideration should be given to adopting strategies to help motivate student success participants who may be inflexible or resistant to adopting new practices. Change within large organizations happens at a pace that may be too slow for some; therefore, openness to learning new technologies, making adjustments in course designs, and trusting in these student success tools to positively impact the lives of students is essential. This will require an additional expenditure of time for the initial development of improvement activities and for their implementation. However, with careful planning, effective leadership provided by dedicated student success teams, and support from concerned stakeholders, the retention crisis facing higher education be averted. Higher education institutions can additionally provide a larger, highly trained work force providing life-time benefits and satisfaction to the students they serve.

CONCLUSION

This extensive study indicates that there is an increasing need for an intense and enhanced focus on student retention and success. Through intentional collaborative effort

between administration, faculty, and staff, there are many opportunities for community college stakeholders to be proactive in assisting students with the completion of their academic goals.

There are more effective and efficient ways to educate today's college students who have grown up in an "information age" of rapid innovation and technological development. These students are not only comfortable with new innovations—they're also competent to use them and prefer them to other methods of learning and communication. Thus, today's community colleges and all institutions of higher education will need to move quickly to implement innovations in the classroom that contribute to technologically enhanced education if they wish to remain relevant and to fulfill their missions.

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APPENDIX A: SSP DATA DESIGN LIST

Student Success Profile- Data Design

Bold items in Appendix A identify potential barriers or challenges to learning (i.e., **first-generation student** = yes, **attended orientation** = no). Items containing "X" values should be determined to correlate with college policies (i.e., a GPA "X" value of 1.5 may indicate a student eligible for academic probation). Additional "X" values should be determined to identify other barrier issues (i.e., a full-time student working more than "X" (or 40) hours a week).

DATA CATEGORY	SAMPLE FIELDS
Personal information	• application date • student ID picture (provided) • full formal name • preferred name • student ID • SS# • **address** (available or **blank)** • phone number(s) • email(s) • emergency contact info • **first-generation student** (no/**yes**) • ethnicity • gender
General Academic Information	• relevant catalog date • student status (full-time, part-time) • **current academic level** (**freshman/**sophomore) • **declared degree/major/minor** (yes/**no**) • **academic goal** (determined/**not determined**) • targeted completion date or targeted graduation date • academic program department • department dean • department chair
High School Credit	• high school name, city, state • program track • **graduation date** (acceptable or **more than X years**) • **G.P.A. (**acceptable or **below X)** • **G.E.D. completion date** (acceptable or **more than X years)**
Placement Testing	• date of exam(s) • **reading** (acceptable or **below X)** • **writing** (acceptable or **below X)** • **math** (acceptable or **below X)** • **English** (acceptable or **below X)**

DATA CATEGORY	SAMPLE FIELDS
Advising	• **last advisor meeting date** (acceptable or **null if full-time or more than X years)** • advisor contact name and information • general topic of discussion
Counseling	• counselor contact name and information
Higher Education coursework	• **last registration date** (acceptable or **more than X years**) Remedial coursework: • required remedial course listing • **total number of remedial courses completed. (**acceptable or **less than X% completed)** • **completed remedial course listing with completion dates (**acceptable or **more than X years**) • **currently enrolled remedial course listing with total credit hours (**acceptable or **above X)** Credit coursework: • **completed course listing with completion dates (**acceptable or **more than X years)** • **completed course grades (**acceptable or **below a C grade)** • **completed course competencies (**acceptable or **Not passed)** • **current GPA** (acceptable or **below X**) • **academic probation (**no or **yes)** • **current semester course listing with total number of credit hours (**acceptable or **credit hours above X)** Transfer credit: • Name of transfer institution(s) • coursework accepted • **course completion dates (**acceptable or **more than X years past the current institution's last registration date)** • credit awarded date Certificates or Degrees earned • certificates earned and dates completed • degrees earned and dates completed • **credit hours earned without a degree or certificate (above X)**
Orientation	• **attended orientation** (yes or **no – if full time**) • orientation method
Financial Aid	• eligible • aid source(s) • amount received • **current semester educational expenses covered (**yes **or no)**

Data Category	Sample Fields
Graduation	• estimated graduation date • application for graduation completed • graduation eligibility confirmed by (name of person) • date of graduation
Accessibility Services	• **list of approved course accommodations**
Co-Curricular activities	• student organizations • leadership positions • service activities
Tutoring/Learning Services	• last date of tutoring • tutoring contact name • reason for visit
Career Placement Services	• last date of visit • Career Placement officer name • reason for visit
Veteran's Services	• last date of visit • Veteran's Services officer name • military branch • last tour date • reason for visit
Foreign language	• primary language • **English proficiency level (low level)** • immigration status • **number of years in the U.S.(if fewer than X years)**
Employment information	• employer name • **full-time** or part-time • **total hours worked per week (if more than X)**
Family	• **number of dependents requiring care from the student (1 or more)** • **number of young children eligible for campus child care (1 or more)**
External activities	• list of activities planned during the semester (Vacation, Military duty, etc.)
Child Care Services	• eligible for child care • number of children

DATA CATEGORY	SAMPLE FIELDS
Student-identified issues (potential barriers to success provided as a list of check boxes)	• **not being involved with other students on campus** • **not managing time well** • **needing to take better notes and improving study habits** • **difficulty remembering information and/or taking tests** • **concerns that math, writing or reading skills need improvement** • **a known issue that inhibits learning or that may require special learning accommodations** • **addressing high levels of stress** • **needs counselling** • **wanting to participate in physical fitness and a healthier lifestyle** • **not knowing what to pursue academically** • **a veteran who needs information about benefits or other assistance** • **English as a second language** • **adult learning challenges**
Calculated Student Risk level	Low, Medium, **High** or Numbering system (**higher than X**)

APPENDIX B: SUGGESTED SSP DATA ENTRY LIST

Suggested SSP Data Entry List

CATEGORY OR DATA	DATA SOURCE(S)	HOW DATA ARE ENTERED
Personal information	Student, Registrar	Photo is input from student ID system following the creation of the student id. Student input or Registrar input using a campus web form.
Institutional Academic Information	Student, Advisor	Student input or Advisor input using campus web form.
High School Credit	High Schools, GED Testing centers.	High school records provided by high school data transfer or email. GED data provided from the GED institution.
Placement Testing	Placement Testing officer	Results transferred from the campus Placement Testing system.
Advising	Advisor	Advisor input.
Counseling	Counselor	Counselor input.
Higher Education coursework	Student, Student Registration System	Student input then transferred from registration system. Data from Transfer Institution.
Orientation	Student or Orientation Attendance officer	Student input into non-anonymous Survey, Data input transferred from orientation records.
Financial Aid	Financial Aid Officer	Data input transferred from Financial Aid system.
Graduation	Graduation Officer	Data input transferred from registration system.
Special Needs	Student, Advising, Faculty, Special Needs Office	Student input into non-anonymous Survey, Meeting with Advisor, Faculty or Special Needs Officer.
On-campus activities	Student, Advising, Faculty, Student Life Officer	Student input into non-anonymous Survey, Meeting with Advisor, Faculty or Student Life Officer.
Center for Academic Success	Student, Advising, Faculty, Center for Academic Success Officer	Student input into non-anonymous Survey, Meeting with Advisor, Faculty or Center for Academic Success Officer.
Career Placement Services	Student, Advisor, Faculty, Career Placement Officer	Student input into non-anonymous Survey, Meeting with Advisor, Faculty or Career Placement Services Officer.
Veteran's Services	Student, Advisor, Faculty, Veteran's Services Officer	Student input into non-anonymous Survey, Meeting with Advisor, Faculty or Veteran's Services Officer.

Category or Data	Data Source(s)	How Data Are Entered
Foreign language Employment information Family External activities Child Care Services	Student, Advisor, Faculty	Student input into non-anonymous Survey, Meeting with Advisor or Faculty.
Student-identified issues (potential barriers to success)	Student, Faculty	Student input into non-anonymous Survey.

APPENDIX C: LINCOLN LAND COMMUNITY COLLEGE APPROVAL LETTER

February 8, 2017

Carmen Allen, Professor
Business and Technologies
Lincoln Land Community College
5250 Shepherd Road
Springfield, IL 62794-9256

Carmen:

This letter serves as authorization to use information provided by the Institutional Research and Effectiveness department at Lincoln Land Community College in your dissertation at Ferris State University. This permission includes student persistence and course success data from your fall 2014 - fall 2016 courses as well as institutional persistence data from the 2016 LLCC Fact Book.

Sincerely,

Tricia A. Kujawa, PhD
Director, Institutional Effectiveness
Phone: 217-786-4671
Email: tricia.tujawa@llcc.edu