

Contributing Factors in Student Retention at Post-Secondary Institutions

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## Abstract

College interventions to promote student retention among post-secondary institutions continue to be a topic of interest as student, institutional and economic factors contribute to increased rates of student persistence and graduation. Reasons for student attrition vary significantly based on student priorities, collegiate interventions and risk-benefit analysis of continuing their education.

In order to best support students and provide the highest likelihood of success, post-secondary institutions must examine their support infrastructure within the classroom and overall college. There are several contributing factors to student success that are within the scope of collegiate interventions, including the following:

*Faculty and student interactions:* Students' perceptions of faculty willingness and ability to prepare them for success both within and outside of the classroom.

*Academic preparedness:* Measures, such as the ACT, SAT and COMPASS tests used to assess the likelihood of academic success in areas of Reading, Writing and Mathematics that determine student placement and need for developmental and remedial interventions.

*Cognitive and academic skills:* Students' skills and ability to think critically, reason and analyze critical information.

*Student motivation:* Internal and external student factors that influence the reasons or goals determining the degree of involvement in academic activities.

*Psychosocial factors:* Cultural, environmental and background of each student that might influence overall success.

*Financial factors:* Students' perceived ability or inability to afford college and the risk versus reward determination of obtaining a degree and the opportunity cost associated with lost income.

*Organizational structure:* Conditions that affect student retention, such as extracurricular activities, student community, student services and processes that enhance the overall efficiency and ease of student persistence and retention.

All of these factors provide a framework for understanding the intricate balance required to help students succeed within and beyond the classroom.

## Introduction

Recently, increased emphasis has been placed on secondary institutions and high school graduation rates as evidence indicates students lack preparedness in the skill set necessary for post-secondary success. Standards have been set in most states as benchmarks for student achievement and tests are administered regularly to hold students, teachers and administrators accountable for student learning in public secondary schools. However, post-secondary institutions have not received the same introspective evaluation. The statistics are startling when comparing student success, defined by graduation rates among high school and four-year college graduates. According to Schneider (2008), "American high schools graduate about 75% of their students in four years, while American colleges graduate only about 50% of their students in six years." As students entering two and four year colleges require more support services and strategies for attaining academic success, thus increasing institutional retention rates, colleges are becoming increasingly aware of the need to implement a dynamic support framework to support learner intake, progress and retention.

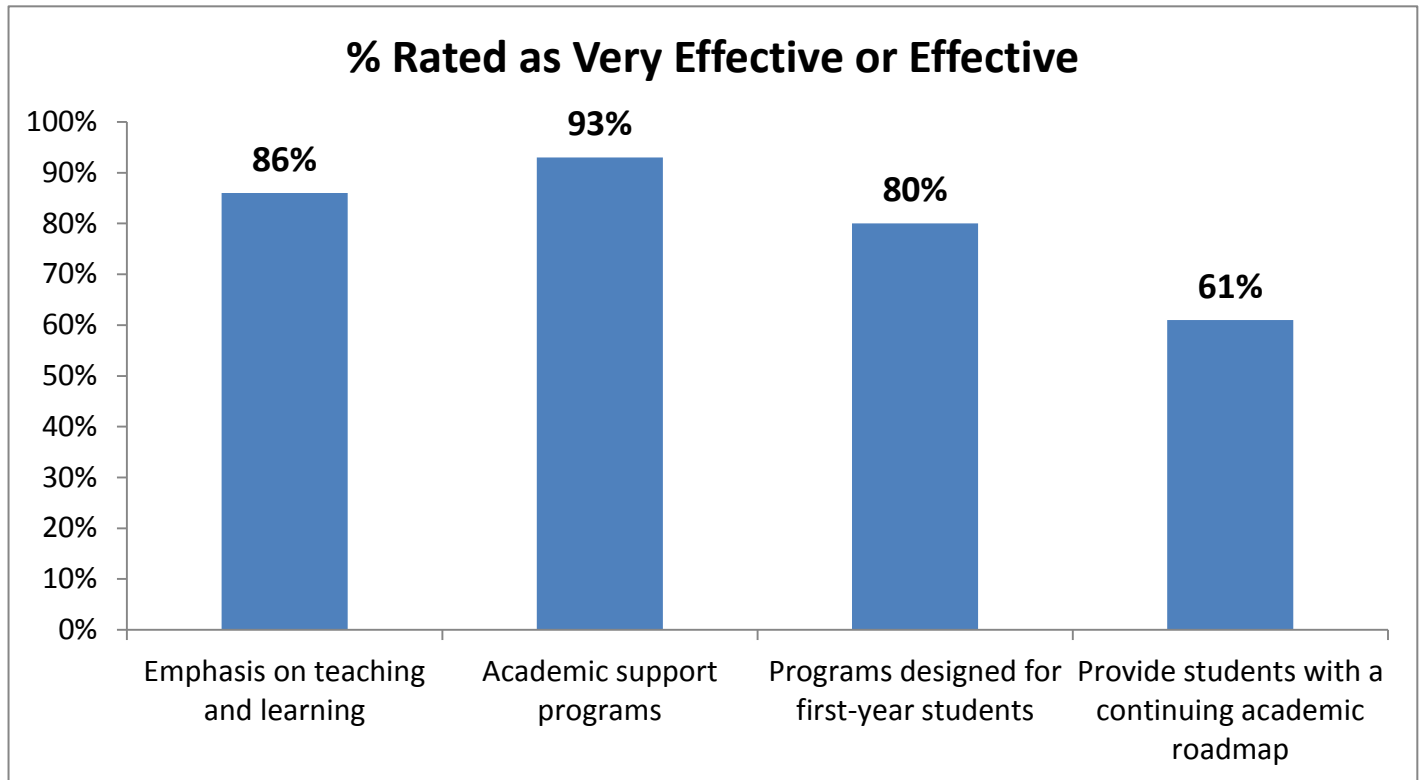
A report to the U.S. Congress and Secretary of Education entitled "Pathways to Success: Integrating Learning with Life and Work to Increase National College Completion" by the Advisory Committee on Student Financial Assistance (2012) indicated that college completion rates have steadily declined throughout the United States over the last several decades. In a response to this trend, President Obama announced in 2009, a commitment to ensure that the United States will once again lead the world in the highest proportion of college graduates, citing the integral relationship between an educated workforce and overall global competitiveness.

A 2011 Noel Levitz National Research Report of 296 colleges, including 100 two-year public institutions, cited ten effective practices in retaining students. Major findings are as follows (Noel Levitz, 2011):

### Retention Interventions – 2 Year Institutions

- 60% of respondents stated their institution uses a current written plan to guide student retention.
- 69.7% stated their institution has a position responsible for coordinating retention activities.
- 63.6% indicated their institution has a retention committee to coordinate and lead activities.

Top Four “Best Practices” identified as effective by Noel Levitz (2011)



The impact of new and expanding proprietary institutions, increased accountability, leaner budgets in secondary education, economic conditions and workforce demand shifts predicate a need for an enhanced emphasis on student retention and support initiatives at public two and four-year post-secondary institutions. Madison College developed a process to address this call to action in an effort to increase student retention by 8.2% over the next three years. For the purposes of this research, student retention is defined as a multi-faceted model for retaining student enrollment from semester to semester until graduation, given that some students remain enrolled on a part-time basis, others leave and re-enroll, and still others transfer to another institution to continue their academic pursuits. All of the aforementioned scenarios are characteristic of successful students that may not accurately be reflected in the data collected. Currently, the Madison College Retention Plan is aimed at lowering student attrition rates of students not included in the above categories, those who are first-time, first-year students enrolling from fall to fall each academic year. The current rate of these students who enrolled at Madison College and returned for the fall semester a year later is 55.8%. The persistence rate, defined as first-time, first-year students who enroll in the fall and remain enrolled the following spring semester, is 72.2%.

In order to address the retention objective, the college has established a measurable, multi-faceted approach to support student retention at the course and program level. Driving these efforts is a new Cognos reporting tool that allows faculty and staff to quickly assess and take action on strategies to enhance student retention within the semester, term-to-term, and year-to-year over a 6-year tracking cycle. The business analytics gleaned from this reporting system will be used to provide focus and direction for the college's retention efforts taking into consideration current student success and completion trends, with the overall goal of increase enrollment and creating sustained growth and college expansion. Furthermore, response to analytics will drive intervention strategies at the course and program level.

### *Research Questions*

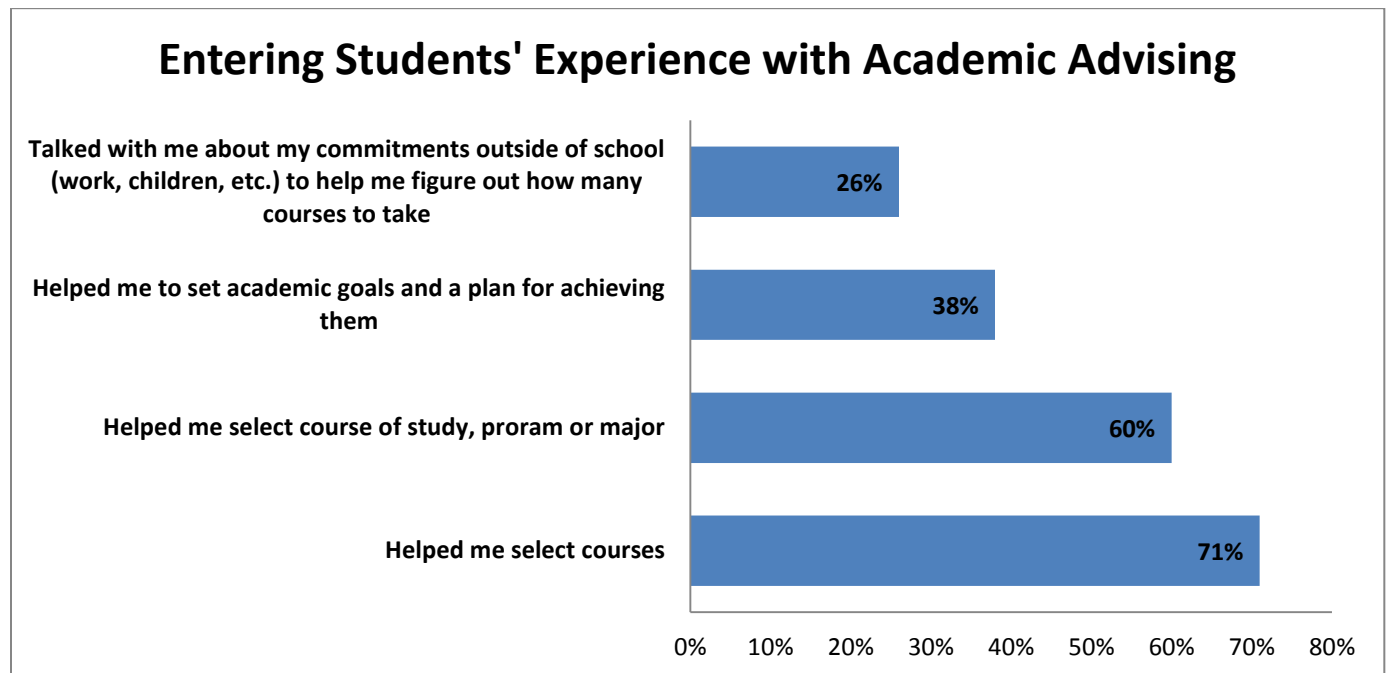
To further explore the complexities of student retention, the following research questions were posed:

- 1) How does the college effectively communicate the delineation between student enrollment and student retention throughout the Madison College community?
- 2) How should Madison College proceed in the assessment of student retention with respect to student attrition rates? Specifically, what are the best practices in trying to address attrition of academically eligible students, common characteristics of departing students, academic term(s) of departure, and reason(s) for student departure?
- 3) How does Madison College most effectively promote awareness of student retention issues and strategies for enhancing student retention based on research gathered through an advanced systematic research and reporting framework? Do these strategies vary based on stakeholder group (e.g. faculty, student support professionals, support staff and administration)
- 4) How does Madison College Administration, along with the assistance from the Department of Institutional Research and Effectiveness (IRE), develop, monitor and create proactive interventions designed to prevent student attrition?

### *Faculty and Student Interaction*

Advising is one of the most complex and critical elements of determining student persistence and retention among post-secondary institutions. Building relationships with formal advisors, career coaches and faculty advisors help students feel supported and provide them with the structure and guidance needed for academic and professional success. A resounding echo can be heard throughout many two and four year post-secondary institutions, that being "We have long since left in the dust the notion that simply opening our doors to students is enough, that, once here, they can negotiate their own way through our often byzantine, labyrinthine curriculum, processes and hallowed halls" (Drake, 2011). Drake's words ring true as

rates of student attrition continue to climb, leaving faculty and administrators longing for a viable solution in how to retain students and prepare them for success. Research indicates a significant component of the formula for increasing student graduation rates includes a strong student advisory model. As indicated by results of the Survey of Entering Student Engagement (SENSE) 2010 of approximately 73,000 students, there are definitive national gaps in advising models used and students expressed advising needs.

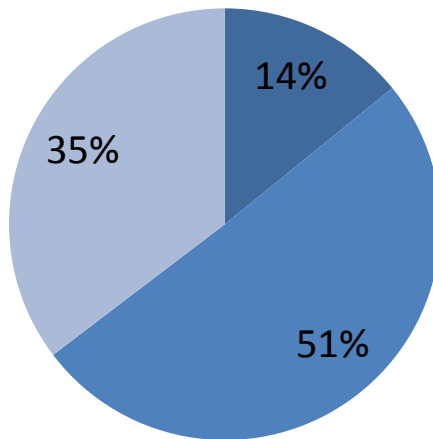


Center for Community College Student Engagement. *A Matter of Degrees*. (2012)

The evolution of what may start as a basic faculty and / or staff advisory role, in the optimal circumstance, can and often does turn into a mentoring relationship, where a successful advisor can become a willing listener, advocate and caring individual that demonstrates concern for each individual mentee regardless of whether they are part of the academic institution or not, thus having a lasting and sustainable impact on students' personal, academic and professional success. As indicated by responses of approximately 32,750 students in the SENSE 2011 study of entry year college students, few (14%) received contact from their college if they were struggling with their studies.

### Someone at this college contacts me if I am struggling with my studies to help me get the assistance I need

■ Yes ■ No ■ Not applicable



Center for Community College Student Engagement. *A Matter of Degrees*. (2012)

This study also highlights a learning opportunity for students in matters of academic preparedness and understanding, as well as where and when to proactively seek assistance. Student advising needs, from the institutional perspective, could be addressed through orientation seminars and courses in study skills, time management, student service offerings and fundamentals of student success.

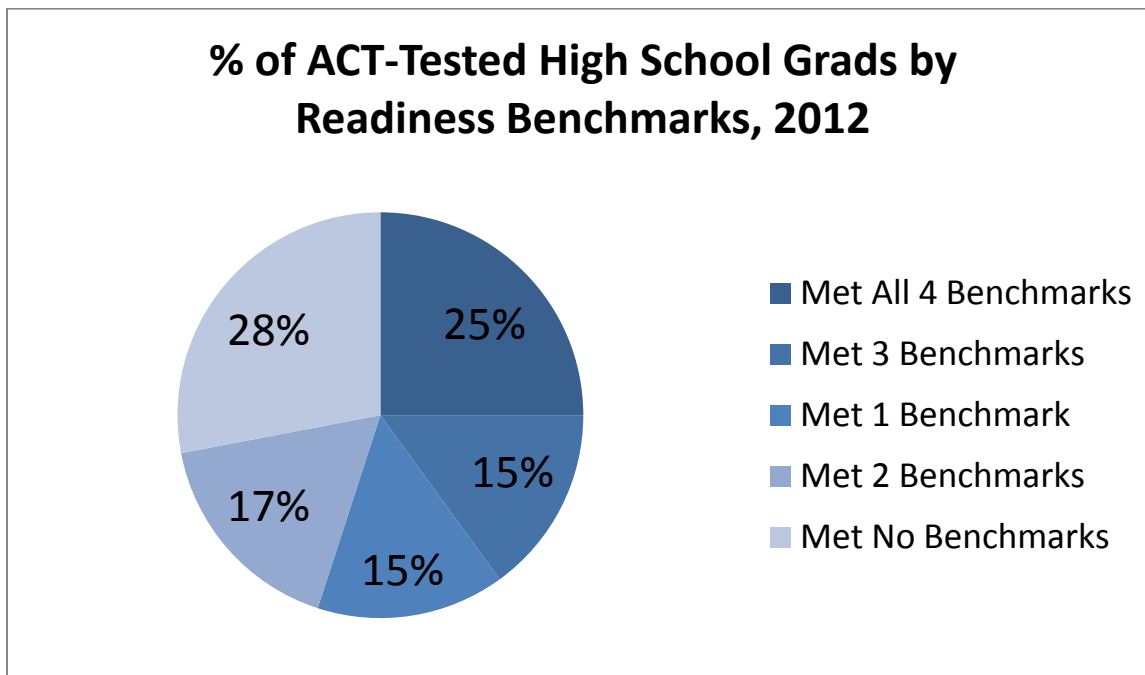
The concept of advisors and mentors is further reinforced in a ten year qualitative longitudinal study of 1,600 recent college graduates from 90 institutions across the United States, which reaffirmed that the value of strong, dynamic and positive academic advising might be the most important characteristic of a successful college education (Light, 2001).

#### *Academic Preparedness for Post-Secondary Learning*

Increased emphasis on standardized testing as a means of holding students and educators accountable has proliferated the secondary education climate as student preparedness for the rigor of postsecondary education has decreased. Therefore, it is important to delineate between academic preparedness and college readiness, as there is a clear distinction. The term *academic preparedness* is the measurement of student success in common core coursework leading up to a student's entry to college, whereas *college readiness*

includes factors above and beyond prior academic achievement, such as time management, study skills, communication skills and emotional intelligence, all of which are important in determining student success beyond the scope of secondary education.

One particular indicator used to gauge the extent of academic preparedness is student achievement results on the ACT, one of the most widely used college entrance exams throughout most of the United States. Of approximately 1.6 million students who completed the ACT in 2012, only 1 in 4 met all four benchmarks for academic preparedness in English, reading, math and science. More alarming were results indicating approximately 28% of students did not pass *any* of the four benchmarks (ACT, 2012).



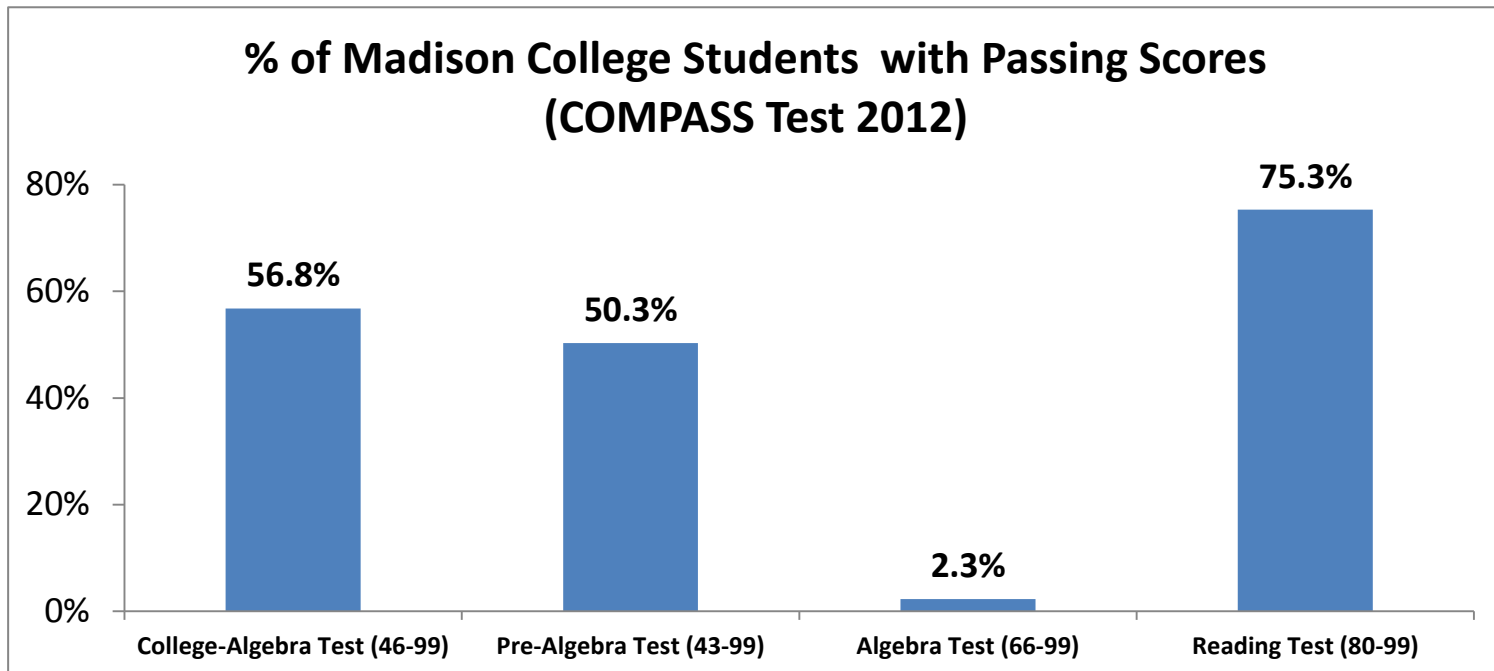
ACT National Data. *The Condition of College & Career Readiness*. (2012)

The lowest overall passage rates among ACT-Tested high school graduates by benchmark were in math and science, respectively. The continued trend of low test performance on standardized assessments has resulted in corporate, state and federal initiatives in STEM (science, technology, engineering and mathematics) programs to support student development and innovation in subject areas of weakness in comparison to other globally competitive countries (ACT, 2012).

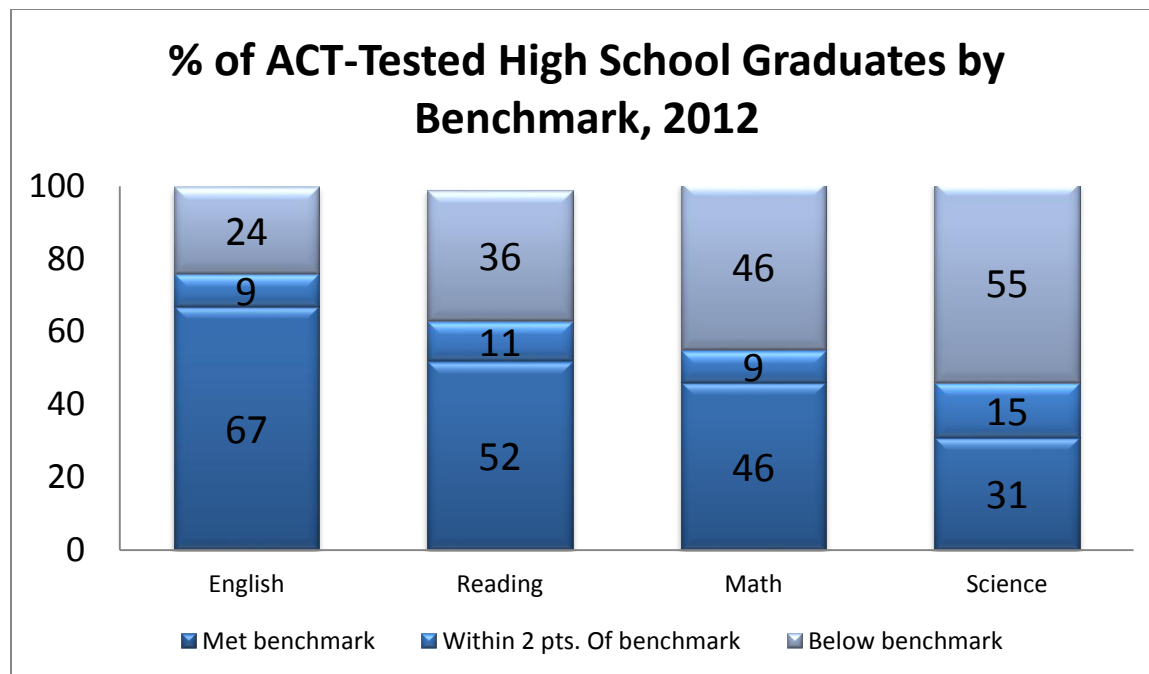


As part of the student retention improvement process at Madison College, action research is conducted continually to measure the impact of student retention initiatives. The COMPASS test is administered at Madison College as a means to measure student academic preparedness for placement and intervention purposes. Of current degree-seeking students enrolled at Madison College who took the COMPASS test, the overall subject area of top performance was reading.

Data indicates over 50% of students who took the COMPASS test at Madison College scored



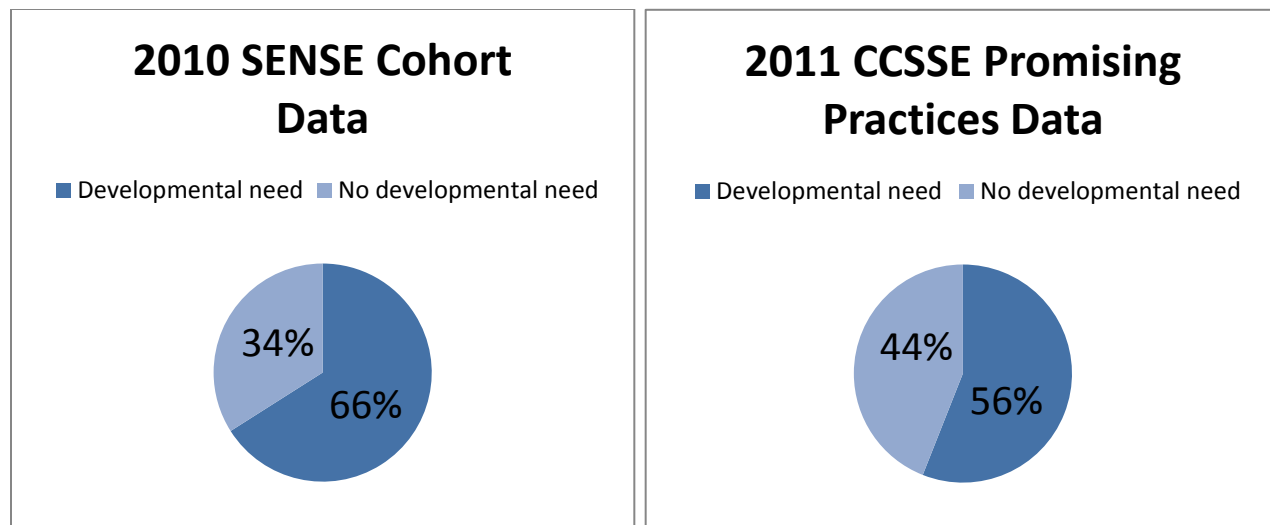
within the accepted range in all areas except algebra, in which approximately 55.5% of students scored between 1-39. The low overall score in Algebra prompted the creation of interventions such as tutoring, developmental and remedial mathematics programs (Madison College Cognos Reporting System, 2012). Math is also an area in need of improvement on national achievement tests, such as the ACT.



ACT National Data. *The Condition of College & Career Readiness*. (2012)

According to Fincher (2010), traditional and non-traditional students share similar statistics pertaining to literacy preparedness. Approximately 21% of female students at four-year institutions are expected to have basic quantitative literacy skills. Between 21 and 33% of non-traditional students are considered poorly prepared to complete an accelerated program of study and the same percentage range of adult learners are considered likely to fail regardless of college interventions. As a direct result of the gap in student readiness, placement testing, tutoring and remedial services have increasingly become a component of student services.

Cohort data provided by SENSE and Center for Community College Student Engagement (CCCSE) support similar results when measuring the student need for developmental or remedial coursework (A Matter of Degrees, 2012).

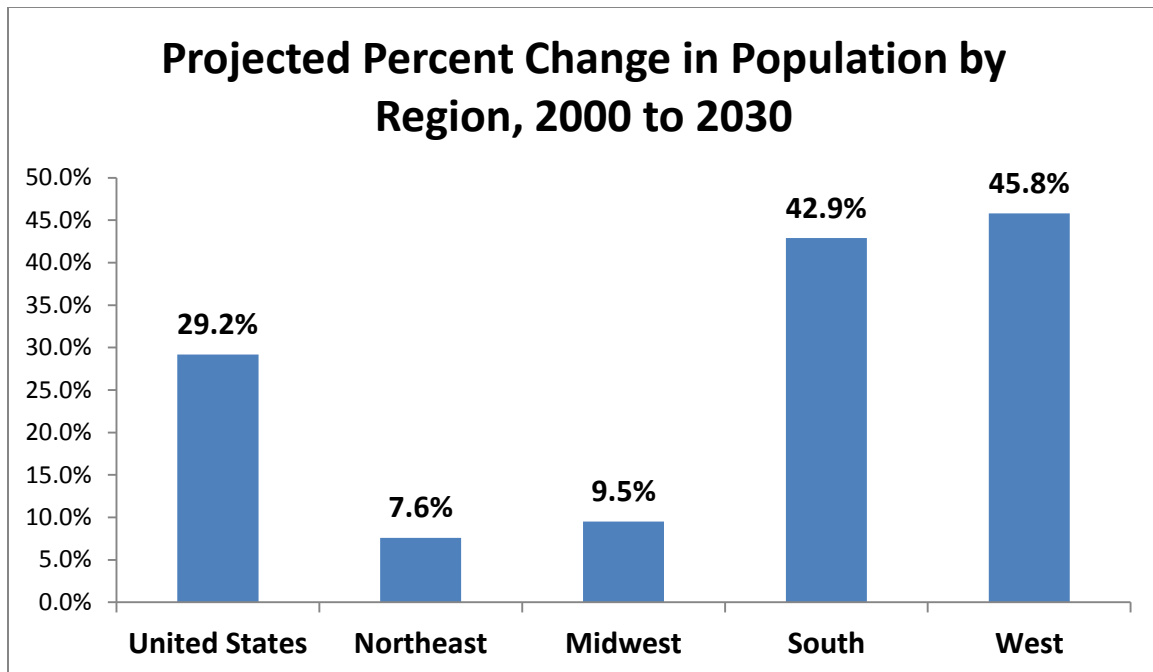


Center for Community College Student Engagement. *A Matter of Degrees*. (2012)

When students do not have adequate command of foundational skills developed in secondary education, the rigorous learning demands in college often become insurmountable. Fincher (2010) states that one approach in overcoming areas of learning deficiency can be through the implementation of a tutoring program that focuses individual attention on student development needs by targeting areas of weakness and providing appropriate and thorough supports to help develop student proficiency. Web-based resources, based in adaptive learning modules are also becoming increasingly the norm in student support as these resources are both cost-effective for the institution and valuable learning instruments for students motivated enough to seek them out.

#### *Economic and Financial Implications Surround Student Attrition Rates*

In general, student demographic trends, as evidenced by U.S. Census data, indicate changes in our aggregate population. The United States is aging, with the median age being 37.2 years in 2010, compared to 35.3 years of age in 2000. Diversity is another important factor as immigration and rates of birth indicate there will likely no longer be a racial or ethnic majority group by 2020, with approximately one in ten U.S. counties being more than fifty percent minority. These trends, happening simultaneously, are creating changes in the student population and the supports needed to drive their overall collegiate success. So what does this *new* student population need in order to be successful? Increasing diversity means creating a dynamic support structure that simultaneously embraces a diverse student body while helping individuals feel a sense of belonging at the college of their choice (Center for Public Education, 2010). Shifts in the overall population within the U.S. are also a determining factor as to where federal funding and additional resources will be required in serving this changing population.



*U.S. Census Bureau, Population Division. (2005) "Interim State Population Projections."*

Additionally, providing supports that close the achievement gaps for diverse student demographic groups, understanding that many of these students may be first generation college students, is an increasingly important initiative. These students often require assistance above and beyond the scope of what students who already have family, friend and mentor supports outside of school may require.

#### *Evaluating Emotional Intelligence, Cognitive and Academic Skills as Indicators of Student Preparedness*

In addition to providing academic and career support, advisors and mentors alike contribute to the positive social and emotional development of students. Emotional intelligence (EI), defined as "a learned ability to understand, use, and express human emotions in healthy and productive ways" (Low & Nelson, nd.), is increasingly an important topic in post-secondary education. Once students obtain the fundamental skills, knowledge, theory and logic governing their respective professions, additional customized knowledge and skill sets are learned in the context of their positions of employment. However, employers are finding that assessments of emotional intelligence are often just as important in determining the likelihood of new employee success. "Lack of interpersonal skills and the inability to adapt to changing environments are the two factors that typically can derail a career" (Phillips, 2006). Because students have varying degrees of emotional intelligence upon entering college, a needs assessment of emotional intelligence could potentially be as important as assessing academic intelligence for placing students in appropriate courses and programs.

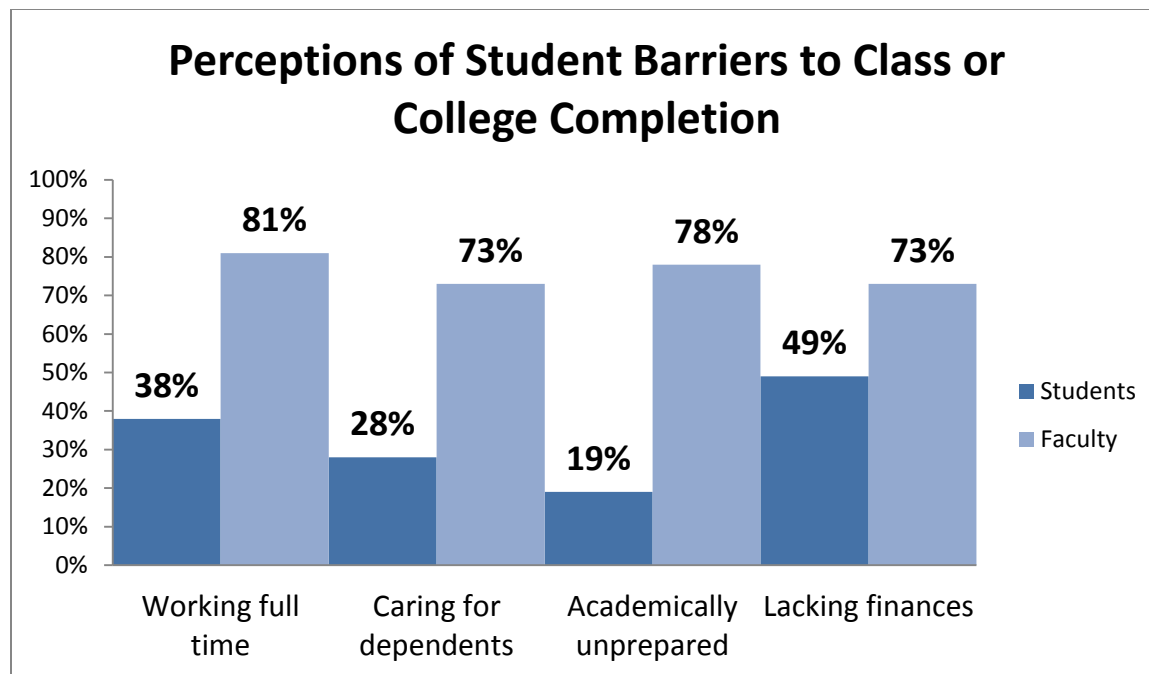
A study of the *Javelina EI Program*, which was a student and academic development program for first-year students at Texas A&M University-Kingsville, received national recognition as an exemplary EI student development model. The program received accolades for innovative and comprehensive courses, workshops and activities that improved student achievement and retention rates. Research findings of this model indicate that emotional intelligence is critical in student achievement, retention, and personal health (Low & Nelson, nd). In this particular model, there are four competency sets, including interpersonal relationships, self-management, personal leadership and intrapersonal skills.

Cognitive and academic readiness for college is often determined by entrance and placement assessments, such as the ACT, SAT and Compass tests, as previously noted. Based upon these assessments, remedial and developmental courses serve as a means of intervention for students who were not successful in high school, helping students build confidence and academic skills necessary for success, thus improving EI. According to a study of 2,643 students conducted at Prince George Community College, establishing academic support programs resulted in an improvement in student success (1998).

#### *Internal and External Factors Affecting Student Motivation*

The motivating factors in determining student retention and likelihood of program completion have long been of interest to academic researchers. The evolution of the student retention movement dates back several decades. Initial research conducted Tinto in the 1970s led to an Interactionist Theory for increasing student retention, which concluded the degree of student motivation to complete college was dependent upon a student's level of commitment to an institution, aspirations or perceived need for attaining a degree, and the overall experience of academic and social interactions while in attendance at the college. During this same period, Astin, another academic researcher and theorist, was examining institutional and student characteristics that determined the likelihood of student graduation, such as type of institution, location, student gender, age, and placement status (Reason, 2009).

Recent research, based on retention models, suggests the decline in student retention is, to an extent, an effect of the changing student demographic, student responsibilities beyond the scope of their academic pursuits, and students' past performance metrics as predictive indicators of success. Understanding the shift in these variables is the basis for addressing the needs of current and future student populations, as well as to effectively accommodate these needs at the macro and micro levels of post-secondary education. To understand issues impacting students' ability and drive to attain their academic aspirations and faculty perceptions of those concerns, CCSSE conducted research in 2011 on various circumstances impacting collegiate attrition rates.



Center for Community College Student Engagement. *A Matter of Degrees*. (2012)

Several studies have shown two measurable primary predictors of student success, those being retention past the first year of school and first-year college GPA (Reason, 2009).

*Psychosocial Student Development*

Various theorists have postulated which factors are most significant in impacting student retention based on experience prior to and during their collegiate experience. Most of these theorists of student development modeling have come to a consensus that the institutional environment, student background, individual characteristics and interactions within the academic community often serve as foundational determinants to positive psychosocial development that predicate college persistence and retention.

<b>Theory</b>	<b>Overview</b>	<b>Concepts</b>
<b><i>Tinto's Theory of Student Departure</i></b>	Explains why students withdrawal from college.	Pre-entry attributes, goals, institutional experiences, integration of learning and outcomes determine the likelihood of attrition.
<b><i>Astin's I-E-O Model and Theory of Involvement</i></b>	Explains how students change or develop.	Inputs, college environment and outcomes that exist after college impact the extent of student development.
<b><i>Pascarella's Model for Assessing Change</i></b>	Considers the direct and indirect influence of structural characteristics and its environment on student change / development.	Student pre-college traits, organizational characteristics, institutional environments, agents of socialization and student effort.

Astin's Input-Environment-Output suggests that maximum student involvement and instructor encouragement are important motivational factors in student achievement (Hutley, nd.). The ability for students to apply their learning and have a sense of ownership and accountability are necessary components of success. Further developing the psychosocial model for student retention is the student's self-perception of academic and intellectual development. As suggested by Tinto, grade point average, and students' perception of faculty concern for student learning and growth are all critical components of course and program success (Braxton, 2000). Pascarella's model for assessing the impact of change on student success suggests a dynamic and non-linear organization of a variety of factors impacting student adaptability to change and successful development. These factors include organizational characteristics, student background, socialization, environment, student effort and cognitive development (LeMasney, 2009).

#### *Financial Implications of Student Success*

Another important element of student success, persistence and retention is student perception of return on investment. If students value obtaining a two or four year degree in respect to the investment of time and financial resources, they are more likely to complete the program in order to attain greater financial outcomes in the long term than they would have had they not pursued a degree. College coursework takes a considerable amount of time and effort. As a direct result and when combined with the increasing cost of college, the opportunity cost of foregoing immediate employment in order to pursue a more lucrative career through obtaining a degree is frequently too high for some students.

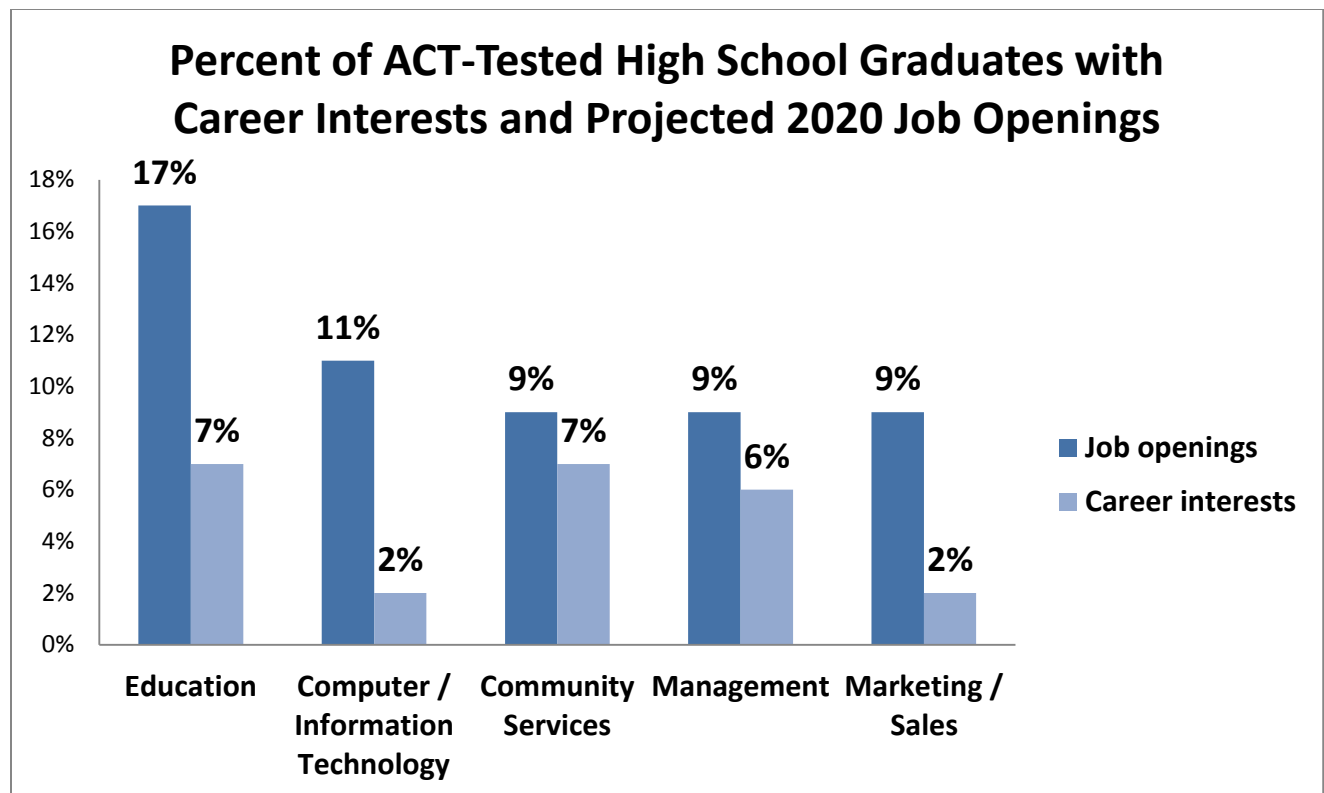
Based on the defining theories of student retention, one could pose that some students who opt out of continuing their education do not have the vision to see the long term benefits and impacts on the quality of their lives by attaining advanced degrees beyond the scope of secondary education. In contrast, the number of U.S. job openings and employment requiring post-secondary education degrees and certifications are anticipated to grow considerably, thus reinforcing the need for an increasingly skilled and educated talent pool.

<b>Employment and total job openings by level of education (2010-2020) – Numbers in thousands</b>						
<b>Typical education needed</b>	<b>Employment</b>		<b>Projected change (2010-2020)</b>		<b>Job openings due to growth and replacement (2010-2020)</b>	
	<b>2010</b>	<b>Projected 2020</b>	<b>Number</b>	<b>Percent</b>	<b>Number</b>	<b>Percent</b>
<b>Total occupations</b>	143,068	163,537	20,468	14.3	54,787	100
<b>Doctoral</b>	4,409	5,286	877	20	1,702	3
<b>Master's</b>	1,986	2,417	431	22	904	2
<b>Bachelor's</b>	22,171	25,827	3,656	17	8,562	16
<b>Associate's</b>	7,995	9,435	1,440	18	2,941	5
<b>Postsecondary non-degree</b>	6,524	7,625	1,101	17	2,390	4
<b>Some college, no degree</b>	812	954	142	18	362	1
<b>High school diploma (or equivalent)</b>	62,090	69,666	7,576	12	21,746	40
<b>Less than high school</b>	37,082	42,327	5,246	14	16,181	30

Sommers, D., & Franklin, J. C. Overview of Projections to 2020. In *U.S. Bureau of Labor Statistics*. (2010)

According to the U.S. Department of Labor, the top five fastest-growing career fields in 2020 include education, computer / information technology, community services, management and marketing / sales. These career categories are projected to account for approximately 55% of job openings from 2010-2020 that require, at minimum, a 2-year degree. Of particular interest is the disparity between the career interests of current and future students and projected job openings in these career fields.





Center for Community College Student Engagement. *A Matter of Degrees*. (2012)

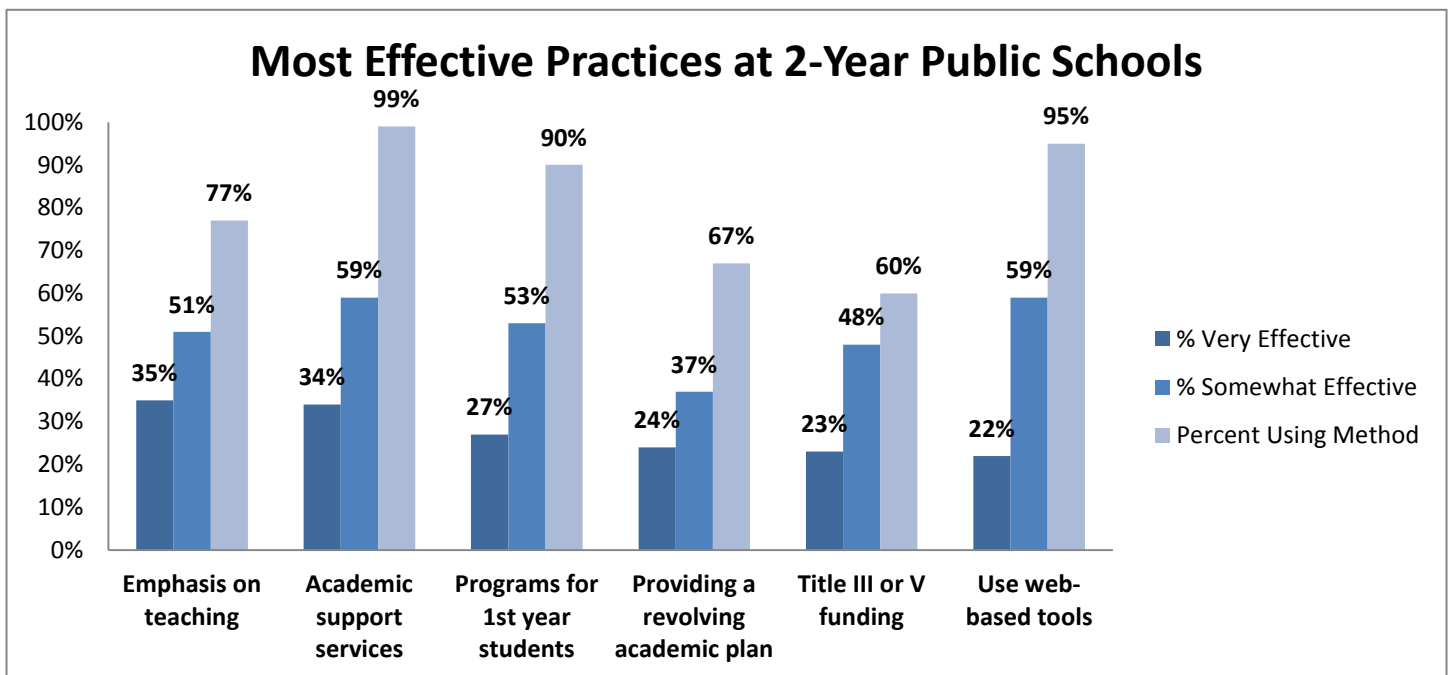
When compared to current data collected on the Madison College district, the projected (2020) national job trend demands for the top five job categories are significantly higher than current (2012-2013) trends for these occupations, with current job growth in each of these areas being approximately 2-3% (EMSI, 2012).

*Institutional Policies and Organizational Conditions*

As economic constraints, high unemployment and worker displacement continue to dominate the contextual environment of student attrition, both two and four year colleges have a vested interest in retaining students through program completion. As a direct result of cuts in federal funding and the consolidation of various educational grant initiatives, states and educational institutions are left to shoulder the burden of the rising cost of college. In turn, the increased financial burden is passed down to the students. The steady rise in the cost of post-secondary education has positioned community colleges nationwide as viable sources of seamless transfer credit to four-year institutions. Four year institutions have seen this trend and the opportunity to strive to increase their enrollment and graduation rates by supporting community college initiatives in increasing student retention. Researchers at Michigan State University released an action plan to address the need for student retention at community colleges.

The initiative focused on orientation programs that emphasize the importance of diversity and students as individuals, developing easy-access programs for ESL students, providing student activities that address diversity issues, and creating an international student fellowship program to include students in the global community experience as well as workshops for students, faculty and administrators (Burke, Goff, Ibrahim, et. Al, 2005). While this study addressed the multicultural aspects of student retention, the basic premise of the plan could be applied in many capacities beyond the scope of multicultural barriers in student retention when translating “diversity” to be inclusive of and applied to students of varying socioeconomic, geographic, gender, age groups, work history and extent of education and experience.

This plan provides an entirely new definition for the traditional understanding of “diversity” in education. This new definition of diversity further reinforces the concept of an advisor as a mentor in the student experience, by building mentor / mentee relationships that encompass all aspects of a student’s life, thus helping them experience lasting success in college and beyond. It is through applied research that the precise formula can be devised and implemented to meet the retention needs of a student body at each post-secondary institution. Research was conducted by Noel Levitz (2011) in which students rated 53 retention strategies utilized by two-year public colleges throughout the United States. Results indicated the



practices viewed as most effective were not necessarily the most utilized methods for increasing student retention.

Eighty-five percent or more of student respondents indicated the top three effective practices of student success included an emphasis on teaching, providing strong academic

support services and designing and implementing a comprehensive program for first year students. However, there were gaps between practices *viewed* as effective and those practices that were actually *implemented*, as reported by students. This was most evident in two of the top three rated practices: teaching emphasis and first year student programs.

Data-driven analytics serve as the foundation for retention plans like the summary designed by Michigan State University, by providing key decision-makers with insight into student support needs unique to each specific institution. Like Michigan State University, two year institutions are also conducting research in an effort to provide a consistent and effective student support framework.

Currently, Rio Salado College is engaged in a student retention effort comparable to that of Madison College, wherein the use of a Predictive Analytics Reporting (PAR) Framework is being designed and implemented in order to determine the degree of risk associated with student persistence (progression from one term to the next) and retention (continuing through the end of a program, thus obtaining graduation status). This instrument, much like the Cognos framework used at Madison College, is designed to help faculty, staff and administration remove barriers to student success and measure the progress of initiatives and strategies implemented to achieve student retention objectives (PRWEB, September 15, 2012).

The Cognos framework used at Madison College is designed to provide analytical support on progress in enhancing the student retention processes and procedures. Madison College's Foundations of Excellence Task Force is participating in the Foundations of Excellence Report Card, a research partnership among 219 colleges, consisting of nine Foundational Dimensions® identifying characteristics of excellence in the first year experience. Based on evidence collected, Madison College was graded (A through F) on the following dimensions (Foundations of Excellence Report Card, 2008):

1. Foundations Institutions intentionally cultivate learning environments for new students that emerge from a philosophy of two-year colleges as gateways to higher education.
2. Foundations Institutions provide a comprehensive, coordinated, and flexible approach to the new student experience through effective organizational structures and policies.
3. Foundations Institutions deliver curricular and co-curricular learning experiences that engage new students in order to develop knowledge, skills, attitudes, and behaviors consistent with the institutional mission, students' academic and career goals, and workplace expectations.
4. Foundations Institutions make new students a high priority for faculty and staff.
5. Foundations Institutions facilitate appropriate student transitions beginning with outreach and recruitment and continuing throughout the period of enrollment.
6. Foundations Institutions serve all new students according to their varied needs.

7. Foundations Institutions ensure that new students experience ongoing exploration of diverse ideas, worldviews, and cultures as a means of enhancing their learning and participation in pluralistic communities.
8. Foundations Institutions promote student understanding of the various roles and purposes of higher education and those unique to two-year institutions, both for the individual and society.
9. Foundations Institutions conduct assessment and maintain associations with other institutions and relevant professional organizations in order to effect improvement.

Metrics and analytics on the nine Foundations of Excellence have yet to be released, but are intended to be evaluated on an ongoing basis to provide a model for continuous refinement of student retention strategies.

### *Summary*

The process flow, timeline and reporting infrastructure used in creating and sustaining a student retention model at Madison College provides insight into how one institution is actively addressing the issue of attrition based on the dynamics at work within the context of the district community and internal school culture. The organizational reporting structure, mission and vision of an institution will often dictate the process flow for the implementation of a student retention plan and the extent to which the plan will be devised by a blended group of stakeholders. Likewise, the timeline for implementation is also dependent upon various factors, such as ease of implementation, plan dynamics, stakeholder support, funding and externalities beyond the scope of predictability.

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