

## **California State University, Fullerton Innovations: Past, Present and Future.**

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### **Participants.**

*Lead*—California State University, Fullerton.

*Community Colleges*—Citrus College, Cypress College, Fullerton College, Santiago Canyon College, Santa Ana College.

*High School Districts*—Fullerton Joint Union High School District, Santa Ana Unified School District.

### **Application Abstract.**

California State University, Fullerton (CSUF) is one of the largest and most diverse public universities in California with an enrollment of more than 38,000 students, nearly 70% of whom are ethnic minorities including historically underrepresented Hispanic, Black, and American Indian students (40% of total). A burgeoning culture of innovation and interdivisional collaboration has powerfully positioned CSUF to navigate through challenges presented by the financial recession, the increased demand for access and entrance to CSUF, and the appointment of new senior leadership to the University. Ranked No. 4 in the nation in awarding baccalaureate degrees to underrepresented students, CSUF leverages the use of high-impact practices (HIPs), experiential learning, and data-driven decision-making to increase graduation rates, reduce time to graduate, and ease the transition to college in order to accomplish these goals. We have piloted projects that increase student participation in co-curricular experiential learning and in curricular-based high-impact practices that lead to an increase in student engagement—a key factor in narrowing achievement gaps. We also implemented a sustainable assessment process, ensured student participation in the advisement process, and improved the ease with which we access and use data to support student success that contributes to higher graduations rates. Because these innovations have had a positive impact on student persistence and graduation rates, especially for first-generation and underprepared students, we have chosen these innovations as our focus and believe them to be the most impactful, sustainable, and scalable.

**Assurance and Signature.**

“I assure that I have read and support this application for an award. I understand that if this application is chosen for an award, my institution will be required to submit a plan for the use of the funds for approval by the Committee on Awards for Innovation in Higher Education and, as the fiscal agent, will be responsible for distributing funds to any other participating entities. I also understand that if this application is selected for an award, my institution will be required to submit reports to the Director of Finance by January 1, 2018 and by January 1, 2020 evaluating the effectiveness of the changes described in this application.”



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**Mildred García, President, California State University, Fullerton**

**Context. 1. Institutional Goals.**

In January 2013, CSUF determined that it wanted to become a model comprehensive university, nationally recognized for exceptional programs that prepare our diverse student body for academic and professional success. An Advisory Committee was formed, and created a plan—which, when fully implemented, will close the education gap for underrepresented students in higher education, and serve as the foundation for ongoing student success. The committee identified the following campus-wide goals as a means to increase the number of baccalaureate degrees awarded:

**Goal:** *Increase student participation in curricular high-impact practices (HIPs), co-curricular experiential learning, or other innovative instructional experiences to increase graduation rates.*

**Innovation Area:** *Student Engagement Activities.* HIPs have been positively linked to behaviors that lead to student success. Underrepresented students who participate in educationally purposeful activities (such as studying, clubs, projects, student organizations and support programs) excel academically because HIPs provide a sense of connectivity, belonging, and community that encourages students to stay engaged. The expectations, structure, support, and involvement make students accountable—making it harder for students to become invisible, fall behind, and drop out.

**Goal:** *Expand use of technology-driven data.*

**Innovation area:** *Campus-Wide Program Assessments and Predictive Analytics.* These programs provide quantitative and qualitative data needed to shape Student Advisement. Well-informed advising of students is key to developing effective pathways to well-paced and well-structured programs that support persistence and educational tenacity, especially for first-generation and underrepresented students. It also drives the development of effective campus policies, systems, and programs so that they meet students' needs.

**Expected Outcomes:**

- Improve student persistence such that by Fall 2018, 90% of 2<sup>nd</sup>-year students will have earned 24 units of degree-applicable course credits and are on track to graduate in 5 years;
- Improve the time required to obtain a degree; increase the number of degrees completed in six years such that the Fall 2012 cohort of first-time full-time freshman graduation rate is at least 10% higher than the Fall 2006 cohort; and, for transfer students, such that the Fall 2014 cohort 4-year graduation rate is at least 10% higher than the Fall 2008 cohort; and
- Reduce the current 12% achievement gap between underrepresented and other students by half.

High-impact practices and experiential learning allows faculty and external mentors the opportunity to get to know students, both inside and outside the classroom. Informal and formal learning has meaningful impact on student learning, behavior, and academic confidence. For underrepresented students struggling with university assimilation these direct engagement opportunities are essential to transforming their college experience and career projections.

Our new curricular/co-curricular program, REACH, focuses on undergraduate research, experience-based learning, active learning, developing community membership, and human explorations—the elements of successful co-curricular programs determined to positively contribute to graduation completion. It will serve as a model program for future HIP experiences.

**Context. 2. Statistical Profile of Students.**

CSUF, a designated Hispanic-Serving Institution (HSI), is one of the largest and most diverse public universities in the state with an enrollment of over 38,000 students, of whom nearly 70% are ethnic minorities, and more than 40% of whom are from historically underrepresented groups including Hispanic, Black, and American Indians (Table 1). Undergraduate Hispanic enrollment has increased from 25% in 2002 to 39% in 2014. About two-thirds of all students are first-generation and low-income students—29% and 38%, respectively (Table 2). CSUF is proud to be the ‘best-value’ campus in the West and 4<sup>th</sup> best in the nation (*Washington Monthly*, “2014 Best Bang for Your Buck Rankings”), and to be 1<sup>st</sup> in the state and 10<sup>th</sup> in the nation in awarding bachelor’s degrees to Hispanics (*Hispanic Outlook in Higher Education*, May 2015). Yet, CSUF still has an achievement gap of 12% for underrepresented ethnic minorities, males, first-generation college students, and those from low-income families.

**Table 1. Ethnic and Racial Groups by Gender – Fall 2014**

GROUP	WOMEN (count)	Percentage of All Women	Percentage of Group	MEN	Percentage of All Men	Percentage of Group	TOTAL (count)	Percentage of All Students
White	5336	25.2%	54.0%	4544	21.5%	46.0%	9880	25.9%
African-American	518	2.4%	62.3%	314	1.5%	37.7%	832	2.2%
Native American	40	0.2%	54.8%	33	0.2%	45.2%	73	0.2%
Asian	4748	22.4%	51.3%	4507	21.3%	48.7%	9255	24.3%
Pac Islander	42	0.2%	59.2%	29	0.1%	40.8%	71	0.2%
Multi-Racial	887	4.2%	55.8%	702	3.3%	44.2%	1589	4.2%
Hispanic	8568	40.5%	59.5%	5835	27.6%	40.5%	14403	37.8%
Unknown	1023	4.8%	50.5%	1002	4.7%	49.5%	2025	5.3%
Total	21162	100.0%	55.5%	16966	80.2%	44.5%	38128	100.0%

Groups	Head Count	Percentage of All Students
Disability	1,539	4.0%
Foster Youth	92	0.2%
Veterans	448	1.2%
Low Income	14,392	37.7%
First Generation	11,024	28.9%
Total Students	38,128	100.0%

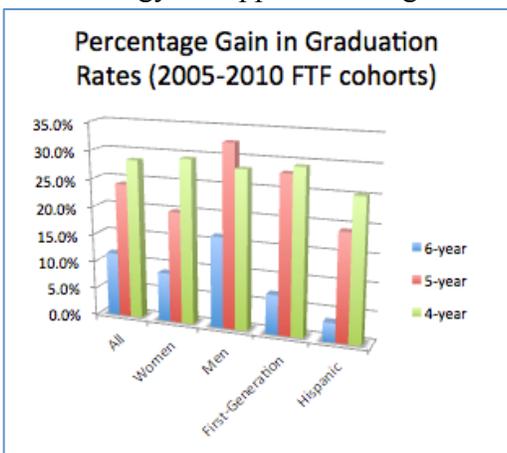
**Table 2. Special Groups – Fall 2014**

With the 2013-18 Strategic Plan, the university is poised to address the factors that affect student success. A persistent issue for minorities, particularly African American and Hispanic students, is graduation rates—they are 10% below White and Asian students. And, there is a 13% gap between Men’s (45.9%) and Women’s (59.1%) six-year graduation rates. The indicators for not achieving 4-year degree completion appear early, as only 25% of first-time freshmen students earn 30 units in their first year, the minimum required to graduate in 4 years. CSUF believes it can influence this factor by providing a robust advisement program designed specifically to assist underrepresented students increase the number of classes attempted and passed. Student preparedness for college is also a factor. CSUF has established strong collaborative ties within the educational system. We are committed to continue developing curriculum, programs, and professional development opportunities with Anaheim Fullerton Joint Union High School District, Fullerton Joint Union High School District, and Santa Ana Unified School District that address student preparedness for college. These programs will address underrepresented students’ lack of access to: co-curricular experiences that enhance what is

taught in the classroom; academic enrichment opportunities, like Supplemental Instruction, which offer peer coaching designed to provide students with better skills so they can improve in courses they are struggling in; academic advisement that helps them pace and structure academic plans and ensures they have enough classes to graduate in 4 years in contrast to over enrolling and then dropping classes.

CSUF analytics reveal that underrepresented (UR) and first-generation (FG) students disproportionately struggle with first-to-second year persistence. CSUF believes its role in understanding the ‘differences’ of students, particularly underrepresented requires administrators and faculty to reach a deep understanding and awareness of characteristics of underrepresented students that are associated with their success. This means addressing systematically, through research and practices, long-held and pernicious assumptions and stereotypes held about underachievement among underrepresented student groups. CSUF is committed to narrowing the achievement gap by developing a sophisticated campus-wide policy presence that advocates for the needs of all students and addressing issues such as: poor identification measures; students’ lack of success in traditional/formal learning environments; a curriculum that fails to boost student achievement to reveal what students can accomplish; and instructors who may be blinded by issues related to cultural, racial, and socioeconomic stereotypes. The implementation of strong advisement programs can help by providing students with additional academic support and providing faculty with opportunities to engage with students to better understand their differences and needs.

CSUF will continue to strengthen its assessment of factors that impede students’ progress. Assessment allows administrators to be more responsive by removing bottlenecked courses, adding sections, providing Supplemental Instruction, and/or redesigning courses to accommodate more diverse ways of learning. CSUF is the west coast leader on Supplemental Instruction. We continue to undergo extensive course redesigns, are developing a campus-wide HIP program (REACH); are experimenting with general education pathways; and, are improving the use of technology to support learning and data-driven decision-making.



An analysis of the graduation rates for the 2005-10 Freshmen cohorts and 2007-12 Transfer student cohorts demonstrates CSUF’s ability to influence factors that lead to increased graduation rates. For example, the 6-, 5- and 4-yr graduation rates for all CSUF first-time freshman (FTF) increased by 11.4%, 24.1%. And a 28.4% increase for 2008, 2009, and 2010 cohorts, respectively, compared to 2005 graduating cohorts (see *All* in the vertical FTF bar graph). Although the latest absolute 6-, 5- and 4- year graduation rates (55.7%, 46.9%, and 17.6% for 2008, 2009 and 2010 cohorts, respectively) are lower than campus expectations and goals, the large gains demonstrate CSUF’s success with

improving graduation rates prior to January 2014.

**Innovations. 3. Past Key Policies, Practices and Systems (prior to 10 January 2014).**

CSUF implemented the following policies, practices, and systems prior to January 2014 that were designed to improve student learning and graduation completion: 1) High-Impact Practices, 2) Curricular Innovations, 3) Co-curricular Experiential Learning. Expanding the use of technology for data-driven decision-making lead to the creation of 4) the Student Success Dashboard, 5) Advisement and Predictive Analytics, and 6) Assessment.

1. High-Impact Practices. The 2013-18 University Strategic Plan adopted in January 2013 focused on strategies that lead to more successful student outcomes [B1]. As a direct result, emphasis was placed on increasing underrepresented student participation in HIPs [B2]. An example of a successful CSUF HIP is undergraduate collaboration in faculty research projects [B3a]. Science and math students from the 2014 cohort who participated in either lower- or upper-division research graduated in higher proportions (the improved graduation rate for 4, 5, 6 years was 169%, 275% and 143, respectively) than their peers who did not. Chemistry and biochemistry majors who participated in at least one lower-division research project increased their grade by 0.2 points in both biology and chemistry gateway courses resulting in 20% higher persistence rates [B3b].

CSUF partnered with six community colleges to provide three STEM-focused HIPs (TEST:UP, HHMI Undergraduate Education and (STEM)<sup>2</sup>) designed to ease transfer to a university campus and ensure persistence in STEM majors [B4]. Students were provided with robust, summer undergraduate experiences as bridges to their transitions. First, they became a part of a learning community as a result of their participation in Supplemental Instruction activities [B5]. Secondly, they received peer mentoring (that spanned the two-to-four-year campus transition) and STEM advising and counseling. And, third, they received tailored orientation programs specifically designed to address the needs of underrepresented groups. All engagement activities improved the ease of transfer students. SI continued at CSUF where in the ‘high rate of failure’ introductory biology course taken by all majors and pre-health professions students, the final course grade for all underrepresented participants improved by 159% vs. 130% for all students. Approximately 4,000 students per year had access to SI [B6].

Freshman Programs is another HIP—it eases the transition from high school to CSUF by creating communities of students, faculty, advisers, professional staff and peer mentors to help first-year students make the most of the college experience. The learning community structure is a proven formula for producing networks that support academic, personal and social success. A longitudinal study of over 3,000 participants found that Freshman Programs had a significant positive effect on first- and second-year persistence, grade point average (GPA), and graduation rates. Persistence gaps closed by >70%, underrepresented group 4-year graduation rates improved nearly 100%, and the 6-year graduation gaps closed by >60% [B7].

2. Curricular Innovations. In 2013, six courses, identified as bottlenecks impeding timely graduation for all students, but that disproportionately affected minority, first-generation, and low-income students, were redesigned to increase the role of HIPs in student success planning. CSUF made changes that included focusing on active-learning pedagogical approaches in the classroom and teaching labs; offering Supplemental Instruction outside the classroom; and including research experiences as part of introductory courses. These courses included introductory gateway courses for STEM majors and key general education courses expected to impact nearly 11,000 students per year. During fall 2013 CSUF took the lead in two disciplines (math and organic chemistry) in the CSU eAcademy, which was created to spread teaching methods proven to remove barriers to graduation [B8].

3. Co-curricular Experiential Learning. The 2010 CSUF National Survey of Student Engagement (NSSE) study revealed low student involvement in activities outside of their majors. As a result the university created the *Get Involved* program and Titan Student Involvement Center (TSIC) under the Student Affairs Division. These programs complemented the Center for Internships and Community Engagement (CICE) already run by Academic Affairs. More than 60,000 students have participated in campus- and community-based activities like student leadership and community service learning. In 2013, by participating in CICE, CSUF students engaged in more the 1.4 million hours of community service [B9]. TSIC data documents participation of thousands of students in student-life activities [B10].

*Educational Partnerships* prepare elementary, middle and high school students for the transition to college [B11] by providing them with experiential learning opportunities that include campus culture and gaining basic academic skills. These programs include Project MISS (Math Intensive Summer Session), a free month-long summer program designed to help 10th and 11th grade girls succeed in college preparatory mathematics at the Algebra II-level, and pursue careers in STEM fields. Since its inception in 1990, 98% of Project MISS participants have completed high school and entered college. Twenty percent of those young women who entered college enrolled in STEM majors, the national average is 15.1% [B12].

4. Student Success Dashboard. The Student Success Dashboard (SSD), developed collaboratively by Institutional Research and Analytical Studies (IRAS) and Information Technology (IT), made information on student success readily available for tracking progress to degree completion [B13]. Piloting of the SSD allowed the College of Humanities and Social Sciences to increase the 2013 graduation rate by 8% (a 2% university increase) compared to the 2012 rate by identifying and, thus, allowing the removal of impediments to degree completion.

5. Advisement and Predictive Analytics. In 2005, all departments developed academic roadmaps for their degree programs. The goal was to help new students visualize their long-term path to graduation and help undeclared students see how their course work could apply to a variety of majors. In 2008, the Division of Academic Affairs and Division of IT worked together to implement an electronic academic-progress tracking system, the Titan Degree Audits (TDA), that quickly and easily provided academic advisers and students data on the completion of courses in both general education and majors programs. In 2011-12 to capture and share adviser analysis, the university implemented the piloting of electronic advising notes to be attached to the TDA. Despite a general agreement by advisers that student behavior changed, hard data were not collected on the impact of these changes. The lesson learned was that having more information about student progress enhances the power of advisement, especially if that information can be supplied before academic risk turns into academic probation. In 2013, in order to improve our ability to identify behaviors associated with academic risk and predict student graduation outcomes, the campus began exploring the Education Advisory Board (EAB) Student Success Collaborative (B14; see Items 4 and 5).

6. Assessment. CSUF's formal assessment program adopted university learning goals and modified or created policies to facilitate the assessment plan (Procedures and Implementation of Assessment of Student Learning Outcomes, University-wide Student Learning Outcomes, and General Education Goals for Student Learning). This program will help track innovation results. CSUF will continue to model future HIP programs and policies after successful programs like Freshman Programs and will include high engagement components. Conversely, CSUF learned that underrepresented students needed early intervention and intensive academic advising in years 1 & 2 that focuses on class selection and academic enrichment support systems.

#### **Innovations. 4. Present Key Policies, Practices and Systems (since 10 January 2014).**

Beginning in 2014, CSUF initiated key changes to campus-wide systems that were intended to increase student success, graduation rates and reduce the time required to obtain a degree. CSUF aligned its policies and practices to the principle of *Access to Success* as put forth by the Education Trust program [C1]. CSUF believes that by ensuring: a) access, b) remediation for under-preparation, c) acculturation, especially for first-generation students, d) engaging courses that offer opportunities for high-quality learning, e) chances to participate in co-curricular activities that offer ‘soft skill’ experiential learning, and f) opportunities and support systems for academic and career planning and goal setting—all of which promote timely and affordable progress toward degree completion [C2]—it will accomplish those goals.

1. High-Impact Practices. To answer the 2014 “Titans Reach Higher” campus call to action, REACH, was developed. The pilot program launches Fall 2015 with a Request for Proposal (RFP) from the Provost and the Vice President of Student Affairs. Faculty will be able to submit proposals describing their HIP programs and requesting that it be considered for inclusion as a REACH approved program. The task force on high-impact practices developed the elements of the REACH concept [C3], which included a definition of what constitutes a CSUF HIP and an assessment rubric for measuring student and program success [C4]. Based on studies by Kuh (2008) highlighting HIPs success with increasing graduation completion in underrepresented

##### **Kuh’s 10 High Impact Practices**

1. *First-year seminars and experiences*
2. *Common intellectual experiences*
3. *Learning communities*
4. *Writing-intensive courses*
5. *Collaborative assignments & projects*
6. *Undergraduate research*
7. *Diversity/global learning*
8. *Service & community-based learning*
9. *Internships*
10. *Capstone courses and projects*

populations and CSUF HIP programs (e.g., Freshman Programs, undergraduate research, and Supplemental Instruction) that demonstrated tangible results, we anticipate a surge in student behaviors that lead to academic success and an increase in graduation rates, in particular by underrepresented students [C5].

We are confident these changes will help us achieve our university goals. As a direct result of previous HIP program success, the task force commissioned a second study of undergraduate research, this time in the College of Health and Human Development. They verified the

impact of CSUF’s model for HIP student research: those who engaged in research graduated 22% sooner and 33% more students entered professional schools after graduation than their peers who did not participate [C6]. REACH is expected to impact 7,500 grads a year.

In Fall 2014, the University launched its college-based student success teams, and administered a workshop facilitated by the U.S. Education Delivery Institute, a non-profit organization that helps institutions focus on proven strategies for closing the achievement gap and increasing college completion [C7]. One of these strategies involves HIPs such as the CSUF Freshman Programs, a program that has helped to enhance student success, especially for students of color. This program has also created communities of students, faculty, advisers, professional staff and peer mentors to help first-year students position themselves for academic success. In the fall semester, students taking part in Freshman Programs enrolled in the freshman-success seminar (UNIV 100). Classes were linked so that groups of students enrolled in courses together as a cohort. By sharing common schedules, students made friends, formed study groups, and socialized outside of class, becoming small learning communities within the larger university. The learning community structure produced networks that support academic, personal and social success. A longitudinal study of CSUF Freshman Programs student cohorts

from 2003-10 (3,069 participants, 44% from underrepresented groups), Moon et al. (2013) found that participation in Freshman Programs had significantly increased first- and second-year retention, grade point average, and graduation rates (see [B7]).

In an effort to scale the successful Freshman Programs model, a new program, ASCEND STEM, targeting 1,200 STEM majors per year, has been approved. Initial discussions began in Fall 2014, course creation is to occur in Spring 2015, and piloting is set for Fall 2015. In ASCEND STEM, students will take one of two freshman experience courses. Engineering and computer science students will take EGGN 100: Introduction to Engineering. Science and math students will take CNSM 100: Introduction to Learning and Thinking in Science and Math. Both courses will incorporate the HIPs of learning communities, community service and undergraduate research components. Research indicates that connecting with students, faculty and staff of an institution is a critical factor in a student's decision to remain in college [C8]. Students will: be introduced to career options; be taught how to set personal academic expectations and long-term goals; explore career opportunities and learn to navigate curriculum roadmaps; confirm or change their direction in a timely manner; and connect with faculty, staff, peers and resources that will support them through graduation.

The HIP components and discipline-specific content will be augmented by interventions designed to strengthen 'learning power'. As part of our data-driven decision-making process, ASCEND STEM will incorporate the Effective Lifelong Learning Inventory (ELLI) into the STEM new student orientation (NSO) to determine student learning power—an attribute that, when strong, assures long-term success. The ELLI is a self-reported survey of how students rate the strength of their learning in seven areas: changing and learning, critical curiosity, meaning making, resilience, creativity, learning relationships, and strategic awareness. The focus of the ELLI is to provide a platform from which instructors can hand over responsibility for learning to students and in so doing to allow them to become deeply engaged in their own learning [C9].

In addition to taking the ELLI, students in STEM NSO will participate in a research experience as one of their orientation activities. Also, incoming students will work together with undergraduate peer mentors to plan and enroll in courses for the upcoming semester, prepare for proficiency exams, determine their learning power, set academic goals for the year, learn time management and academic navigation skills, enroll in first semester courses, and identify at least one co-curricular activity that they will participate in during the upcoming year. We believe these changes will be instrumental in achieving university-wide student success goals. Based on our experiences with Supplemental Instruction at CSUF we find peer-to-peer interactions particularly effective in establishing expectations and introducing new students to the culture of our programs.

2. Curricular Innovations. Thematic General Education (GE) pathways are an innovative approach that we predict will improve persistence and learning. GE courses have proliferated at CSUF and nearly half the total degree units a student

must complete for graduation are in general education, but our Advisement Center has observed that too often students select GE courses without any guidance, accruing units that do not apply to their majors and future careers or that do not enable them complete their degree in a timely fashion. For first-generation and underrepresented students whose parents did not attend college, there is no support for explaining the importance of selecting courses. Without direction this

*GE Pathways will incorporate HIPs like freshman-year experiences, team-based projects, multi-course learning communities, comprehensive team-based problem-solving projects, involvement in service learning, and other modes of instruction that favor active learning.*

population of students tend to have a poorly structured, random collection of GE courses that inefficiently meet the GE requirements and often result in duplications that extend students' time to graduation. To address this gap, CSUF created and piloted GE thematic pathways—a collection of thematically related courses that meet general education requirements. In fall 2014, the campus wide Lower-Division GE Pathways (Sustainability, Global Studies, Power & Politics, and Food, Health, & Well-Being) and College of Humanities & Social Sciences based Upper-Division GE Pathways (Globalization, Sustainability, Power and Politics, Human Rights/Social Justice, and Innovative Leadership) were piloted with 400 students. In fall 2014, ASCEND STEM planned another new STEM-oriented GE pathway that will be integrated across lower- and upper-divisions. During spring 2015 the development team will create or adapt courses in the *Science, Technology, and Society* pathway. This pathway will link the ASCEND STEM first-year courses with other lower-division and upper-division general education courses that will synergize with STEM major pathways. Creating GE pathways is one policy we believe will significantly contribute to graduation completion and reduce the amount of time it takes to

*CSUF is committed to narrowing the achievement gap by developing a sophisticated campus-wide policy presence that advocates for the needs of all students in addressing issues.*

obtain a degree. By reducing the number of unnecessary classes taken, students should graduate sooner. We expect a significant increase in 4-year graduation rates in underrepresented students as a result.

Another change in the CSUF system that we believe will help achieve student success is course redesign. The

University expanded its 2013 focus on bottleneck courses in 2014 by redesigning courses to meet the needs of its diverse student population. With grants from the Chancellor's Office, supported through matching funds from the University, course redesigns were successfully implemented for MATH 115, College Algebra; BIOL 101, Elements of Biology; BIOL 171, Biodiversity & Evolution; HIST 110, Western Civilization; POLI 100, Introduction to Political Science; and CHEM 120B, General Chemistry [C10]. These courses improved curricular experiences for more than 10,000 students. Redesigning these courses to offer more class offerings, focus on active-learning pedagogical approaches, or, offer access to Supplemental Instruction—all so that students successfully complete these courses—is a critical step in removing barriers for underserved students that hinder the university's ability to close the achievement gap.

**3. Co-curricular Experiential Learning.** The partnerships with Santa Ana, Anaheim and Fullerton regional school districts and eight regional community colleges (in TEST:UP, (STEM)<sup>2</sup>, ENGAGE and HHMI programs ) continue to prepare middle school, high school, and community college students for the transition to CSUF. The transition activities focus on preparing students for the university (culture, rigors of academics, importance of and opportunity for involvement in curricular and co-curricular activities). Students are given advice on selecting courses and guidance on scheduling (navigating the general education and majors courses). Students are exposed to HIPs that offer Supplemental Instruction and summer/weekend research experiences—all of which prepare them for the expectations of the university (see [B4, B5]).

STEM, Inc. (Strategies: Science, Technology and Engineering Mini-business Incubator) is a new partnership project that proposes to design innovative after-school programs that engage middle school students at Anaheim Unified High School District (AUHSD) pursuing STEM education and career paths. The project proposes to integrate STEM study and entrepreneurship training to engage middle school students, especially those from under-represented groups. CSUF aims to re-engage student interest into STEM careers by integrating experiential learning content into the program. Incorporating entrepreneurial concepts, skills and career exploration

opportunities will help deviate from traditional teaching methods and ignite curiosity, fun and interest from students. This approach will help CSUF achieve student success with its collaborative partners.

**4. Student Success Dashboard.** The CSUF Student Success Dashboard was piloted using a cross-section of university colleges, administrators, faculty, and staff advisers. As a result of the feedback new features and enhancements were added that improved the program's functionality. The dashboard helps its users to answer questions such as: *Are there students that have earned a degree, but who have not had the degree conferred? Do we have current-semester degree candidates that will come up short even if they complete all units in progress? Are fall 2014 freshmen already at risk for poor performance?* Also, the dashboard provides opportunities for advisers to proactively contact students before census point to ensure they enroll in sufficient classes to earn their degrees in a timely manner. It allows advisers to review courses after the semester has begun to see if a new student has AP or transfer units that have not yet been evaluated. And, it allows advisers to review records of students who did not re-enroll from the previous semester to compare the status of voluntary (good grades) versus involuntary (probation/disqualification) attrition so they can intervene and offer suggestions on how to get the student back in school and on track. At present, the reduction of graduation deferrals is one of the most impactful outcomes. For example, by May, 2014 more than 350 students in the College of Humanities & Social Sciences (CHSS) who had completed their degree requirements but had not requested graduation review were identified and provided guidance on completing the process so they could graduate. Using the dashboard, the University was also able to identify students who had earned 120 units or more but had not applied for graduation. Of 430 graduation candidates the CHSS was able to prevent 101 (24%) from receiving a deferral; 49% changed their graduation date and 51% successfully graduated in August, 2014 [C11]. This new system and accompanying policies has demonstrated its effectiveness in increasing graduation rate, ease of transfer to college and its ability to help reduce the time for graduation completion.

**5. Advisement and Predictive Analytics.** In the Spring of 2014 the Office of Academic Programs completed a comprehensive review of the University's advising structure and identified seven key elements designed to support student academic, career, and personal development success that will be implemented during the remaining 2013-2018 Strategic Plan cycle as part of an integrated advising structure. These elements include: the implementation of advising pathways; expanded mandatory advising; recruitment of additional professional advisers; use of technology solutions to inform and track advising; implementation of professional development opportunities on advising for faculty and staff; implementation of college/unit-based student success teams; and use of assessment and evaluation to support continual improvement. In 2014, academic roadmaps that emphasize 4-year degree completion based on the state's new performance funding metrics were created for advisers, the Office of Academic Programs, and the Division of Student Affairs. The collaborative team will work with academic units in the Spring of 2015 to develop two-year course rotation plans that further enhance advising. We are particularly mindful of the University's responsibility to provide guidance to first-generation students who lack the presence of a familial academic support network that can assist the student in course selection, planning, and enrichment services.

Expanded mandatory advising for students in all eight colleges was implemented in Fall 2014 to focus on students who earned between 75-90 units. The university reported more than 90% participation for the nearly 4,000 students who attended the 106 group-advising workshops sponsored by the Academic Advisement Center and college-based graduation specialists. In

Spring 2014, the University successfully recruited 8 new college-based graduation specialists, whose intrusive advising efforts have reduced graduation deferrals. In spring 2015, the university will recruit 9 new professional advisers to serve as retention specialists, whose work will focus on freshman and sophomore students, and include special populations such as veterans, athletes, students with disabilities, and other underrepresented populations. The University has also implemented technology solutions to support advising. For example, the Academic Advisement Center (AAC) worked in collaboration with the Division of Information Technology to implement the Titan Advising Network (TAN) and Note System to help connect students to their team of advisers. TAN is an advising tool that supports transparency, accuracy and consistency in reporting. Additionally, the Education Advisory Board's (EAB) Student Success Collaborative (SSC) is being piloted as part of an advising practice that uses predictive analytics to identify a complex set of student behaviors and performances that leads to or hinders success in a specific set of courses or major pathways. In 2014, the College of Health and Human Development (HHD) and AAC used the SSC predictive analytics and the University's Student Success Dashboard to generate data that allowed students and advisers to map the steps needed to increase the likelihood of graduation [C12].

Using predictive analytics, advisement can be more intrusive. Intrusive advising differs from the traditional prescriptive advising or developmental advising. It is a proactive approach where advisers initiate contact with students to establish connections before problems arise [C13]. This process begins prior to or during New Student Orientation (NSO) when the adviser is working individually with the student to plan his/her courses for the semester.

Association Rules Mining, a data-mining method that is used in predictive modeling to discover relationships in data sets with many variables, was used to answer the question of why transfer students in the Mihaylo College of Business and Economics (MCBE) graduated at a lower rate than the university as a whole. The study analyzed two new transfer student cohorts and their first term success in two required lower-division courses with their transfer grade point average. At the same time, a study of barriers to graduation by MCBE juniors who entered as freshman was performed. These investigations concluded that no single course was a barrier to graduation for either group; instead there was a complex set of variables at play. The solution was to develop a student-success course that all business majors would take as they entered the upper-division concentration. The course will be created in Spring 2015 for initial offering in Fall 2015. If successful, the project has the potential to improve graduation likelihood for 400 students per year. This analysis also offers the promise to close achievement gaps and improve persistence rates for low-income and first-generation students.

In 2014, the (STEM)<sup>2</sup> program developed a novel advising tool for transfer students, the California Education Planner (CEP), and piloted it to ease transfers into STEM majors from three regional community colleges. The CEP is a tool to build term-by-term roadmaps from a list of approved transfer courses that ensures students are enrolling in the right courses needed to transfer to CSUF. It uses STEM Associate of Science-Transfer (AS-T) degree courses as the standard for successful transition to CSUF. The community college counselors and students confirm that the CEP allowed the students to plan their academic programs efficiently and thus take fewer classes prior to transferring into CSUF. Nearly 200 students who used the CEP and participated in two other program experiences were guaranteed admission to CSUF and given early registration dates. Preliminary results show that 100% of all qualified to transfer have transferred to a four-year institution and 70-100% attended CSUF (see [B4] for data). Based on

this program and a campus-wide environment that encourages AS-T degree completion, CSUF has enrolled a rising percentage of transfer students who have completed AS-T degrees [C14].

6. Assessment. In 2014, a formal program assessment process was initiated, resulting in the adoption of a University Policy Statement (UPS) on assessment and the establishment of the Office of Assessment and Educational Effectiveness (OAE), dedicated campus space; a Director and support staff. The office received approval of baseline funding that supported the appointment of faculty members on release time to serve as college-based assessment liaisons. It offered professional development workshops to faculty and staff on strategies for effective assessments and implemented an online platform for tracking, documenting, and reporting assessment of student learning. The development of the infrastructure builds on expected student learning outcomes across the University. A key component of this infrastructure is the recommendation of an assessment and educational effectiveness plan by the Academic Senate Assessment and Educational Effectiveness Committee (AEEC), which defined the responsibilities of faculty and administration with respect to assessment. It also outlined a six-step assessment process to guide assessment of curricular and co-curricular activities. The six-step process clarifies how measurable/assessable outcomes are developed, the criteria and methods for outcomes assessment, analysis of data, use of assessment results for improvement, and documentation of assessment activity (see [C15] for examples). For documentation, the University has successfully implemented an assessment management system, using *Compliance Assist*, a Campus Labs software solution. While the University has been engaged in the process of student learning assessment over the past several years, the nature and extent of assessment across the university are varied, and the details of assessment have not been systematically documented. To capture such information, an Assessment Activities and Results Survey for 2012-2014 academic year was administered in Spring 2014 to all academic departments. Sixty departments and programs completed the survey. The results of the survey released to the campus community in Fall 2014 has also highlighted the need for continual improvement of the infrastructure to support assessment of student learning [C16]. The wide dissemination of assessment data to the campus community is intended to demonstrate the value of assessment in fostering student learning. The University's effort to expand the use of technology-driven data in support of student success is highlighted by the creation of an office dedicated to assessment. We expect the impact to be huge in achieving our graduation completion goals.

**Innovations. 5. Future Key Policies, Practices and Systems (after 9 January 2015).**

From 2015-2018 CSUF expects to achieve its institutional goals and the goals outlined in its 2013-18 University Strategic Plan by implementing projects successfully piloted in 2014.

**1. High-Impact Practices.** During Spring 2015, we will present the implementation plan for REACH (see [C3]) to campus stakeholders for additional input and feedback. In parallel, we will release the RFP to call for course or program proposals that seek formal approval to qualify for the program. The review committee will review submissions to ensure course attributes align with HIP metrics. Each course or program approved will pilot for three years. Full approval will be awarded based on evidence that the program yielded tangible positive impact. Faculty will be provided with professional development opportunities to prepare them for developing and administering HIP courses [D1]. The 2015-16 REACH pilot program goals are to: 1) refine the procedure for assessing HIPs; 2) review and approve CSUF HIPs; 3) formulate a collaborative plan (Academic Affairs and Student Affairs) to integrate curricular and co-curricular efforts; and 4) build a campus culture that embraces HIPs. By 2018, we expect that 75% of all graduates will have participated in at least two REACH HIPs. CSUF will gather and evaluate data on the outcomes of the REACH program that will be used to further improve future campus-wide HIPs.

**2. Curricular Innovations.** In Fall 2014, the Lower-Division (LD) GE Pathways (Sustainability, Global Studies, Power & Politics, and Food, Health, & Well-Being) and College of Humanities & Social Sciences based Upper-Division (UD) GE Pathways (Globalization, Sustainability, Power and Politics, Human Rights/Social Justice, and Innovative Leadership) were piloted in an effort to reduce the time required to graduate. The ASCEND STEM developed a new STEM-oriented GE pathway, *Science, Technology, and Society*, to be integrated across LD and UD aimed at easing the transition to University campus and increasing the number of students entering STEM careers. Preliminary evidence indicates that these pathways will contribute significantly to achieving our goals of student success [D2]. In 2015, The Director of Undergraduate Programs & General Education and the two GE Faculty Coordinators were tasked with leading the creative process for this and two other new pathways and will collect data on the pathways' impact on student performance and persistence. It will be another couple of years before we have sufficient data to determine whether these innovations have impacted student success as they promise to do. The ASCEND STEM program has funding through December 2016 that includes data collection and analysis on how summer, first-year, and STEM-based pathways influence the ease of transition, graduation rates and amount of time it takes STEM majors to graduate. The project study plan is robust and we expect several publications to emerge as a result [D3]. CSUF is committed to increasing the number of students pursuing STEM majors. If these pathways prove successful, we will model future programs after these.

**3. Co-curricular Experiential Learning.** The *Get Involved* program administered by the Division of Student Affairs is a key stakeholder in student success. In 2015, Student Affairs will be shifting its focus to ensure collection of quality data on promoting student success. This will include aligning its HIPs, data collection criteria, and program effectiveness with REACH goals, objectives and criteria to ensure truly transformational high-impact practice.

**4. Student Success Dashboard.** CSUF is committed to achieving the goals of item 1. A key factor in achieving this success is obtaining current student data to use as baseline data for assessing student needs, identifying gaps, trends, and opportunities, developing effective programs and providing relevant resources, and monitoring the university's responsiveness. Currently, three different sources feed data into the SSD: 1) the initial static list of students for the new term, 2) a dynamic set of academic data from the student information system, and 3) the

degree audit data from a separate database. CSUF plans to strengthen the SSD by importing data on students' participation in REACH activities into the database. This new information will allow the university to assess the value of HIPs on student success, development more co-curricular opportunities, and develop a rollout-training program. We anticipate replicating the current SSD to track progress of our graduate students (aggregated by college, department, ethnicity, parent education, and prior type of degree).

5. Advisement and Predictive Analytics. To ensure the overall success of our 2013-15 University Strategic Plan CSUF is implementing a comprehensive evaluation of its campus advising structure. The goal is to insure an integrated framework for campus-wide advisement, as data shows it is a key factor that supports student success. CSUF will increase the use of data and technology over the course of the Strategic Plan to support and strengthen intrusive advising. Central to this framework is the *Access to Success* principle that advocates for technology solutions to drive data-based decision-making. The University has identified nearly 9,000 students who can be helped by intrusive advisement. Such students fall into one of four categories: on academic probation, requesting or have received graduation deferral, non-enrolled matriculated, or new transfers entering with an AA-T or AS-T (SB1440). We think that the use of technology to strengthen advisement and predictive analytics is crucial in meeting our goals.

In Fall 2014, the Division of Student Affairs began recruiting 9 retention coordinators that will be deployed in 2015 to the University's eight colleges specifically to increase the retention and graduations rates of special populations. This will bring to 18 the number of student services professional advisers hired since Spring 2014 to support intrusive advising for freshman to senior level students. Specialists track student cases, provide monthly reports, conduct program evaluation, assess student advising learning outcomes, and implement preventative strategies to decrease graduation deferrals, disqualification, and reduce student dropouts. Specialists also receive centralized proven, evidence-based professional development on intrusive advising methodologies designed to optimize graduation rates. This model also frees up faculty so they can spend more time in high-impact instructional activities. Data will be collected on the effectiveness of these specialists. If these data show that these professionals help improve student success, then CSUF will recruit additional college-based professional advisers. EAB predictive analytics (an advising tool employing predictive algorithms to generate individualized recommendations) will help students and advisers identify factors that lead to graduation completion. The six remaining colleges will receive access to the EAB system in 2015. Data reporting the outcomes of the impact of the retention specialists will be reported in 2018. We expect an asymptotic reduction in graduation deferrals.

6. Assessment. CSUF's campus-wide Assessment and Educational Effectiveness Plan will guide continual improvement in curricular and co-curricular learning, including programs and services that support learning [D4]. The plan has three key elements: Infrastructure, Process, and Culture. The Infrastructure section assigns responsibilities to academic units, deans, assessment and educational effectiveness committee and indicates how the Academic Programs (AP) and Office of Assessment and Educational Effectiveness (OAEE) will support those groups in meeting their responsibilities. The Process section lists the six steps for developing and implementing an effective assessment plan. And, the Culture section defines the collaboration among the Assessment and Educational Effectiveness Committee (AEEC), AP, and OAEE in creating a culture supportive of the infrastructure for continual improvement in institutional quality, including tracking, documentation, and reporting on assessment activities. Assessment is essential in continuous improvement practices.

**Innovations. 6. Impact of Changes on Affordability.**

By any measure, CSUF is one of the most cost-efficient institutions of higher education in the nation. When it comes to affordability, only three other institutions in the U.S. serving > 15,000 students are ranked higher. CSUF students spend only \$6,555 per year—less by \$1,500 than the fifth ranked institution [E1]. CSUF students graduate with 49% lower debt than the national average at only \$14,626 compared to \$28,400 [E2]. Yet, CSUF ranks among the “Top Public Regional Universities” [E3]. This success has been achieved despite the fact that it receives lower state funding than other CSUs. CSUF is at the bottom of the per-student allocations chart, receiving nearly \$1,000 less per student than comparable large, urban campuses like CSU Northridge and San Diego State University [E4]. Also, CSUF has the smallest per-student footprint of any CSU campus. Nevertheless, its economic impact is huge. CSUF generates \$1 billion in regional and statewide economic activity, sustains more than 8,700 jobs in the region, and generates more than \$65 million per year in state tax revenues [E5].

The fiscal challenge is for CSUF to sustain the pilot programs it has been implementing the last several years and fund the policies, programs, and system changes it plans to add in the next three years. The institutionalization of the six innovations presented in response to Items 3-5 has and will require the repurposing of a significant proportion of CSUF funds—a task made more difficult because of the extremely low per-student support it receives from the state.

CSUF anticipates that to provide incentives for academic units to develop innovations that improve student persistence, close achievement gaps, and shorten times to graduation without affecting affordability, a success-oriented, innovative outcomes-based funding (OBF) model must be introduced to augment the current student number-based practice. The revenues for OBF will come from existing sources, but the model will also position CSUF to compete successfully for new, outcomes-based funding sources of funding for growth of HIP-intensive programs like REACH and ASCEND STEM and promising projects like GE Pathways and Get Involved.

Despite being one of the least expensive universities in the U.S., CSUF can improve affordability further. As CSUF succeeds in raising the quality of learning, strengthening performance, improving persistence, closing achievement gaps for first-generation and low-income students, it also increases graduation rates and shortens the time to graduation—by reducing the amount of time in college, CSUF already reduces the amount of money students spend. For example, CSUF met the 2015 CSU Graduation Initiative to increase the six-year graduation rate to 55% in 2014. A detailed analysis of the first-time freshman (FTF) graduation rates shows that the 2010, 2009, and 2008 cohorts’ 4-yr, 5-yr, and 6-yr graduation rates increased by 11.4, 24.1, and 28.4%, respectively, compared to the 2005 cohort (see *All* in the bar graph, p.5). There were 4,519 students in the 2008 FTF cohort and at the 50% 6-yr graduation rate of the 2005 cohort 2,259 students would have completed their degrees compared to the improved 6-yr graduation rate of 55.7% exhibited by the 2008 cohort that graduated 2,517 students—an increased graduation rate of 11.4% (258 students). If each student who graduated within six years had shortened her/his time to graduation by an average of one year, the result would have been a total student savings of \$1,688,457 and a 14% decrease in average cost per degree. Thus, the innovations that are in place on our campus will have an increasingly large effect on the affordability of a CSUF degree as the 4-, 5-, and 6-year graduation rates increase. *We would like to highlight that CSUF has achieved these improvements with the lowest per-student expenditure of any four-year public institution in the State of California. We believe it illustrates the remarkable value of CSUF’s innovations and, in the context of the Award for Innovation in Higher Education goals, believe it should elevate CSUF’s qualifications for the award.*

**Innovations. 7. Risks and Tradeoffs.**

With every new idea there are risks and tradeoffs. However, because our innovations are primarily campus-wide academic infrastructure-based, we do not expect adverse effects on any student groups that are underrepresented in higher education.

1. High-Impact Practices. Successful HIPs require faculty time allocation outside of the classroom for focused student interactions. This modification requires the recoding of workload designations. A code change from Lecture to Activity requires a different cost structure and workload allocation. Additionally, the application of experiential learning inherent in HIPs may require specialized equipment and learning spaces. Thus, one tradeoff might be the potential for increasing per-course costs. Yet, if HIPs offer improved student success, as the data show they can, then the tradeoff in per-course cost will be offset by the shortening of time to graduation and the cost-recovery can be factored into the fiscal restructuring required to support a HIP Program like REACH. Additionally, a new, add-on budget allocation structure is being piloted in 2015-18. It is an outcomes-based funding model that is expected to help incentivize the development of REACH courses and also help fund them.

In order for REACH to be effective, all HIP-approved courses must meet a precisely defined set of criteria. Faculty who believe their courses include HIPs but fail to obtain REACH approval, are likely to be disgruntled. Other faculty who feel they are already working beyond capacity may think that CSUF is asking them ‘to do more with less’. However, workload issues can be mitigated by changes in course staffing structures. Additionally, as faculty become more familiar with HIPs criteria and see the tangible positive results in their students, we believe they will be more likely to seek professional development to learn HIP Best Practice instruction, improve their skills and experiences, which will make it easier to teach future courses.

Additionally, during the 2016-2018 period, CSUF intends to develop HIP awards to recognize students and faculty who make remarkable achievement or contributions in the REACH program. For example, high achievers (as designated by their instructors or colleagues) could receive designation as a REACH HIP Scholar (offered to students) or a REACH Fellow (offer to faculty and staff). There is concern that this will create sets of elite students and faculty, but the University has similar programs: the Honors, Future, Guardian, and Presidents’ Scholars as well as special recognition for faculty and staff achievements, and the experience with these programs have been positive and therefore will frame HIPs messaging to the campus community.

2. Curricular Innovations. The creation of themed, general education pathways disrupts the *status quo* for the way the CSUF general education program has operated for the past several decades. Current student-based funding supports the activities of smaller degree programs for the majors in many departments. A new paradigm whereby resource-demanding HIPs requires two departments to share interdisciplinary courses from different colleges may create issues. This is especially true for STEM or Arts pathways that focus on topics intended to complement and mesh with schedules these hierarchical majors. Similarly, the expansion of Freshman Programs into a full GE first-year experience requires GE pathway course approvals not given in the past. However, the University has piloted small-scale initiatives to test their efficacy and will leverage the results of successful implementations to guide campus-wide expansion and scalability of future programs. Discussions are underway among campus stakeholders in the few cases where past practices conflict with implementation of experimental innovations; shared governance structures is expected to resolve differences and facilitate change that is supported by evidence as it always has done.

3. Co-curricular Experiential Learning. There is concern that participation in academic curricular courses that directly generate credits for graduation may suffer as a direct result of students' participation in non-curricular REACH activities. However, research proves that high levels of engagement in curricular and co-curricular activities correlate positively with persistence and overall student success. CSUF will mitigate the potential of this imbalance with careful, personalized advising designed to keep the student on track to complete degrees more efficiently.

4. Advisement and Predictive Analytics. Faculty are concerned that intrusive advisement will demand so much of their time that the students' academic success may suffer. A tradeoff is that CSUF is hiring trained staff professionals to administer academic and career advising, mentor students, as well as support faculty advisers. Under the direction of the Deans, these specialists will be involved in centrally managed training activities (30% allocated time) but will provide advising in the majors of their assigned college (70% allocated time).

5. Assessment. Faculty are concerned about the tangential correlation of outcomes-based assessment of student performance to the evaluation of their own professional performance. The belief is that a process that can link student performance to obtaining degrees could also produce criteria for the administration to use to discontinue programs and/or to assess the performance of individual faculty. However, different University Policy Statements (UPS) are clear about the process for program discontinuance and in assuring faculty that program assessment is not to be a punitive mechanism. Rather, assessment will be used to support continuous renewal of degree programs. Moreover, the UPS on assessment clearly indicates that assessment is program-controlled, and therefore underscores a faculty role in using assessment as a management tool to support improvements in student learning and program quality. While the University continues to build a culture of campus-wide assessment, it is important that our message emphasizes 'assessment is an instrument we will use to strengthen student success on a campus where learning is considered preeminent'.

6. Outcomes-Based Funding. The addition of an outcomes-based funding (OBF) component would bring with it a shift in budget allocation practices for departments responsible for supporting general education and majors programs. Departments will need to address the following: *How will this shift in the allocation of funds change how we operate? How will the departments adapt and become sustainable? Will actions taken to optimize departmental performance and meet the OBF outcomes trump the department's focus on achieving student learning goals? And, if it threatens to so, what actions must be taken to mitigate those outcomes? If the baseline goal is to shorten the time to graduation, what are the consequences for reducing the rigor of academics to achieve that goal?* The University believes transparent communications and inclusive discussions will help the departments resolve these issues in productive, student-success oriented ways. Ultimately, the campus stakeholders must devise carefully considered, comprehensive answers to these and other question that will align with the framework for developing and implementing the OBF model to be proposed by the task force in Spring 2015.

**Sustainability. 8. Supporting a Culture of Innovation and Adaptability.**

CSUF's ability to encourage and sustain a culture of innovation and adaptability begins with a strong commitment from its senior leadership to meet its institutional goals. The driving force of the 2013-15 Strategic Plan is student success. Another key asset is campus-wide buy-in and support of the University Strategic plan. Teams of campus stakeholders are developing learning opportunities, programs, experiences and shared resources that create a stable foundation for the culture of innovation necessary to sustain the projects discussed throughout this application.

The University continues to build on its strong culture of student success with results that demonstrate positive trends in reducing the achievement gap. From 2012-14, graduation rates increased from 51% to 56%, indicating a strong commitment from all stakeholders to ensure Access to Success. The CSUF 2014 Interim Report to WASC attributes this improvement to six central elements: a clear problem statement, a clear vision, an institutional mission, a robust strategic plan, an intentional operational plan, and several institutional maxims [F1].

The Student Success Initiative launched in Fall 2014 further positioned the University to improve. It included the expansion of academic advising; increased course availability; increased library hours and advanced technology; access to athletic facilities, learning communities, internships, career counseling, supplemental instruction, and service-learning; access to classrooms and provide instructional software; cultural events, veterans services, and disability support services, as well as creating a one-stop student service center; expanding educational technology by expanding WiFi and offering a 24-7 help desk to students.

Additionally, CSUF remains committed to technology-driven innovations. CSUF believes the use of data in driving relevant, effective, and cost efficient decision-making is one of its greatest assets. The Division of Information Technology (IT) is collaborating with the Divisions of Student Affairs (SA) and Academic Affairs (AA) to provide data collection and database development in order to support effective decision-making.

1. High-Impact Practices. As a campus-wide HIP program, REACH is a novelty. A task force has been specifically created to implement Strategic Goal No. 2 of the University's Strategic Plan that integrates HIPs into curricular and co-curricular courses. Data from five CSUF-sponsored HIP programs (Freshman Programs, Supplemental Instruction, study abroad, residence hall living, and undergraduate research) prove the value of transformative contributions to student success. Each of these programs increases student persistence (especially among first-generation, low-income and underrepresented groups), narrows or closes achievement gaps, and shortens the time to graduation. Tailored HIPs have been a presence at CSUF for more than 40 years in different forms in different colleges. But REACH promises to provide tangible opportunities for all faculty and students to 'Reach Higher,' the public motto of CSUF. Resources for sustaining the REACH model have been leveraged by interdivisional teams from Academic Affairs, Student Affairs, and Information Technology to ensure the success of REACH, and as a direct result, our students. These teams derived from the strategic task force and working groups are committed and active [F2].

2. Curricular Innovations. Faculty, staff and administrators are committed to creating innovative approaches to student success by developing a variety of GE pathway courses to improve their persistence and degree completion [F3]. The Provost is supporting this experiment managed by Academic Programs with determined expectations that key student-success indicators will continue to present in favor of the pathways. In a different curricular arena, the Provost also supports the redesign of courses or processes previously found to slow student progress to degree completion. He has demonstrated this support by the prudent use of his

Strategic Investment Plan to support redesign projects in general education, key courses service many majors, and in processes like new student orientation that promise to impact student success in novel ways. This ongoing commitment by academic leadership in assessing, modifying, and creating new ways to improve student success demonstrates CSUF's ability to nurture and sustain a culture of innovation.

3. Co-curricular Experiential Learning. The Center for Internship and Community Engagement (CICE) and the *Get Involved* (GI) program are springboards for CSUF's culture of innovation. Leveraging successful components from these HIP and programs CSUF will ensure that REACH's campus-wide "reach" helps to close the achievement gap. The growth of CICE from a pilot project and the many national awards it has earned illustrate its great success and CSUF's ability to continue to develop innovative ways of promoting student success [F4].

The partnerships between CSUF and Anaheim Fullerton Joint Union High School District, Fullerton Joint Union High School District, Santa Ana Unified School Districts and Citrus Community College, Cypress Community College, Fullerton Community College, Golden West Community College, Mt. San Antonio Community College, Rancho Santiago Community College, Saddleback Community College, and Santa Ana Community Colleges are managed by the Division for Student Affairs, Colleges of Engineering & Computer Science, Education, and Natural Sciences & Mathematics, guided by leadership from the VP for Student Affairs, College Deans, and Provost [F5]. Each unit has project managers who oversee the relationship between CSUF and partnering campus leadership to maintain open channels of communications and keep the partnerships operational. Each project creates opportunities for partners to work with CSUF faculty on new research-based projects focused on closing the achievement gap, offering professional development opportunities for K-12/Community College staff and administrators, and easing the transition to a successful university campus life. Collaborations include top leadership from HSDs, CCCs and CSUF [A1], as well as others, on advisory boards [F6].

4. Advisement and Predictive Analytics. Another example of CSUF's institutional commitment to sustainability is within the Academic Advisement Center (AAC). AAC recently hired five Graduation Specialists who have increased graduation rates 3-8% (the number varies according to the college) since 2012. They identify students receiving graduation deferrals early in the process then advise them on what actions to take in order to convert their status to 'Approved for Graduation'. The AAC Director, AVP for Academic Programs recommended hiring nine more Retention Coordinators, to become members of the colleges' student success team. The Provost approved and committed to filling these positions (and more depending on additional funding) over the next five years.

5. Assessment. CSUF is committed to building an integrated campus-wide assessment program that leads to reducing the time to graduate. The expansion of the Office of Assessment and Educational Effectiveness, the hiring of its new director, and the purchase of enterprise database to track assessment activities and outcomes demonstrate that commitment. The recently hired Associate Vice President for Academic Programs and the Provost are fully committed to using these data as the drivers for change in the CSUF academic curricula.

6. Outcomes-Based Funding. In 2014, the Division of Academic Affairs initiated conversations to design a comprehensive internal outcomes-based funding (OBF) model. The task force, chaired by the Provost, is discussing methods for incentivizing departments to develop strategies to improve student performance and lead to the desired outcome of decreasing the time to degree completion [F7]. The Provost is testing such incentives at the college and academic office levels through his Strategic Investment Plan fund of ca. \$10,000,000/year [F8].

**Sustainability. 9. Engaging Stakeholders**

CSUF was able to engage a wide variety of stakeholders in the development of the 2013-18 University Strategic Plan that focuses on increasing the graduation rate and closing the achievement gaps, particularly for underrepresented students. Students, staff, faculty, and administrators participated in surveys, online submission of suggestions and comments, and town hall meetings on the four goals.

CSUF would achieve campus-wide commitment to implementing innovations in 2015-18 as required to achieve the goals described in item 1 by providing each stakeholder with custom-tailored presentations that outline each innovation, its role in either increasing student success or removing barriers that prevent timely student progress, and the stakeholder's role, responsibilities and expectations in helping CSUF achieve these goals followed by in-depth discussions about creating practices and systems that promote continuity and long-term partnerships designed to sustain changes at all levels of the structure (including institutional leadership). These presentations will be held at the: President's Cabinet, President's Advisory Board, Academic Senate, Council of Deans, Council of Chairs, Provost's Cabinet, Student Affairs Leadership Team, Academic Programs Leadership Team, Associated Students Inc. Leadership, Student Affairs Cluster Leadership Teams, President's Strategic Plan Task Force on HIPs, New Faculty Orientation, and other informal gatherings like Pizza with the President and Vice Presidents. External partners participate in various advisory boards that bring leadership from CSUF together with leaders from partnering institutions in meetings where presentations and discussions occur. For example, in a November 2014 Presidential Enrollment Management Advisory Group meeting the agenda included topics like providing access to students and insuring their success, updates on outreach efforts and results of educational partnerships, and establishing pipelines for students and insuring their transition into CSUF. The discussion allowed leadership from all institutions to express concerns of interest to all stakeholders.

With respect to scalability and fiscal sustainability, the CSUF senior leadership is particularly interested in implementing an internal outcomes-based funding model. Currently, most funding decisions are made solely on the basis of full-time equivalent students (FTES) served. This approach has served CSUF well during the FTES-driven funding era of higher education. But to succeed in the current climate of expected outcomes as drivers for funding allocations and be prepared to meet such expectations, we must design a phased approach to weaken the dependence of our internal funding model on maximizing FTESs and strengthen its correlation to optimizing student success outcomes (as defined on p. 8, ¶1).

An outcomes-based funding (OBF) model is under development by a task force [F7] and will be piloted in Academic Affairs. Because it will impact how the university funds some student success-oriented activities, it will be presented first to university senior leadership at the President's Advisory Council, which includes vice presidents, college deans, shared governance leaders and student leaders. The next step, a broader discussion about how implementation of this innovative model would impact the university as a whole, would occur in meetings with the Planning, Resource and Business Committee (PRBC). This committee, a standing committee of the Academic Senate that includes ten faculty members, two staff members, two students, the academic senate chair, and the vice presidents, makes recommendations to the President on the annual budget. Based on PRBC concerns, issues of policy would be brought to the Academic Senate for deliberation and action. In parallel, the Council of Chairs would discuss the issues. Then at department meetings, faculty would provide input into the process, understand the general processes of the model, and develop a sense of how it will impact them as individuals.

**Sustainability. 10. Sustaining Changes within Existing Financial Resources**

While additional funds to support Cal State Fullerton's innovations would strengthen our ability to sustain and enhance the changes described in Items 4 and 5, CSUF's senior leadership has taken its fiscal commitment to student success seriously. The President, Provost, and key administrators have developed a diversified approach to funding key strategies that enhance, improve, and scale innovative programs that foster student success. Funds from the Provost's Strategic Investment Plan have been allocated to subsidize these programs. Other financial resources include grants from system, state, federal agencies and foundations.

The President is committed to sustaining the University Strategic Goals (that include the institutional goals for this application) as exemplified by her 2014-15 budget memo ([http://president.fullerton.edu/\\_resources/media/PRBC\\_2014-15.pdf](http://president.fullerton.edu/_resources/media/PRBC_2014-15.pdf)) in which she says, "... Continuing the efforts of last year's budget process, I have placed the highest priority on ... increase[ing] instructional capacity, expand[ing] the implementation of High Impact Practices (HIPs), and continu[ing] to strengthen the quality of our academic programs.... Consistent with PRBC's recommendations, I have provided funding ... to support programmatic requests that directly align with realizing University strategic goals." To sustain the changes described in this application, she allocated new funds to support: Assessment of Student Learning to develop structures and training necessary for assessment activities (\$299,151); Academic Affairs and the Office of the Provost to support programmatic areas (\$1,861,433), and Student Affairs to support the Center for Internships and Community Engagement (CICE) (\$210,454). She goes on to note that, "...Provost Cruz is evaluating the reallocation of existing resources to address the PRBC's recommendations to ... scale existing and emerging HIPs and implement new efforts (e.g., course redesign) to enhance student success...."

During the past few years, the Provost's Strategic Investment Plan has allocated about \$10 million per year to enhance the ability of colleges and departments to improve student academic performance, with major investments made in the areas of assessment, advisement, predictive analytics, and course redesign, including general education pathways (see [F8]).

Examples of recent awards aligned with our institutional goals and obtained through our proposal writing efforts, on the other hand, include: ten course redesign projects (ca. \$250,000; see [C10]), institutionalization of Supplemental Instruction (ca. \$500,000), HSI STEM projects called (STEM)<sup>2</sup> (ca. \$6,000,000) and ENGAGE (ca. \$1,000,000), and Helmsley Charitable Trust project called ASCEND STEM (ca. \$400,000). Several of these externally funded projects also include matching funds from the Provost's Strategic Investment Plan.

It is also important to note that, in an effort to maximize the return on investment associated with existing financial resources, CSUF is in the early stages of developing an outcomes-based funding model that will modify long-standing practices that no longer support synergy between our internal values and the expectations of external stakeholders. The objective of this work is to design a phased approach to reduce the dependence of our internal funding model on FTESs and strengthen its correlation to improved outcomes.

In the past CSUF's fiscal approach focused on closing the access gap. While enrollment-based funding assured access for a diverse population of students, it fell short on delivering in key areas of student success. We witnessed a gradual decline in graduation rates, a rise in drop out rates, and the widening of achievement gaps. During the past five years, the allocation of funds has shifted to focus on correcting these deficiencies. The changes and funding for the interventions described in this application are examples of how the CSUF focus has shifted even before the incentive of the Awards for Innovation in Higher Education was announced.

**Evaluation. 11. Evaluating Innovations.**

CSUF will rely on its comprehensive student information database, Common Management System (CMS), a customized version of the PeopleSoft ERP system, to measure student response to the proposed innovations. CMS stores student academic information and allows the retrieval of comprehensive reports by populations (e.g., athletes, veterans, first generation, etc.) and courses (e.g., REACH, GE Pathways, etc.). In addition to tracking student performance, these data will be used for creating models to predict graduation outcomes of first-time freshman and transfer student cohorts. CSUF will use quantitative data to match students with interventions to determine whether they are earning a sufficient number of units to graduate in a timely manner. The CMS will allow CSUF to quantitatively evaluate the degree of effectiveness our innovations in achieving our goals in item 1. We will use the results to modify our policies, systems, programs and projects to better address the needs of our students, in particular underrepresented populations.

CSUF will use the CMS database (managed by IT) to evaluate the effectiveness of the innovations for first-time freshmen, first-generation and low-income students. The **near-term quantitative performance indicators** are: 1) first semester retention rates; 2) 1-, 2- and 3-year retention rates; and 3) 4-year graduation rates, and the **long-term quantitative performance metrics** are: 4) 5- and 6- year graduation rates; and 5) graduate/doctoral program enrollment as post-baccalaureate outcomes.

These data will be collected by several different groups and organized into different applications for tracking of student success: Institutional Research and Analytical Studies (IRAS) is responsible for the Student Success Dashboard (SSD) (see [B13b] and [H6]); our subscription to Educational Advisory Board's (EAB) Student Success Collaborative provides *Predictive Analytics* [see B14]; and our subscription to Campus Labs' *Compliance Assist* [see H3] allows the Office of Assessment and Educational Effectiveness and Student Affairs to prepare databases for the Program Assessment and *Get Involved* programs. The evaluation of progress toward our institutional goals will be documented by these data-tracking systems and used for various internal and external reports.

Graduation Specialists and Retention Coordinators will perform **qualitative analyses** of student attitudes and behaviors through contacts during the EAB analytics-driven intrusive advising process and SSD-driven graduation deferral workshops. The information collected will help CSUF understand how students respond to guidance offered through these interactions.

Data collected on the outcomes of the innovations described in this application will be correlated with the five quantitative metrics listed above to inform CSUF about the success of each innovation. Small-scale pilots of innovations that promote student success as determined by these metrics will be used as models for scaling up to campus-wide implementation. Innovations that offer no or negative correlation with student success will be modified in ways proposed to create positive effects or discontinued in favor of more promising endeavors. This cyclic process of piloting promising innovations, collecting data on their effect on student success, modification of innovations to improve positive impacts, and broad scale implementation of projects that are successful will allow CSUF to continually improving the quality of its curricular and co-curricular programs and enhance student success in the process.

Qualitative data will help us improve the way we interact with individual student populations, especially underrepresented, first-generation, and low-income groups. We predict that coupling quantitative data with these qualitative data will help CSUF bring more students through their academic pathways more efficiently and effectively.

**Evaluation. 12. Annual Target Outcomes through 2018-19**

Goal for year at graduation	2015	2016	2017	2018	Cumulative target
Curricular high-impact practices <sup>1</sup>	37.5%	50%	62.5%	75%	75%
Co-curricular experiential learning <sup>2</sup>	10%	15%	20%	25%	25%
Assessment <sup>3</sup>	32.5%	55%	77.5%	100%	100%
Advisement <sup>4</sup>	46.5% 60-91+ units	56% 31-91+ units	65.5% 12-91+ units	75% 0-91+ units	75% 0-91+ units
Data tracking					
SSD <sup>5</sup>	MA/MS	EDD	DNP	DPT	UG, Mstrs, Doc
EAB PA <sup>6</sup>	5 colleges	6 colleges	7 colleges	8 colleges	8 colleges
CampusLabs <sup>7</sup>	62.5%	75%	82.5%	100%	100%
Persistence <sup>8</sup>	82.5%	85%	87.5%	90%	90%
Increase (%) in timely degree completion					
Freshman <sup>9</sup>	53.5%	56%	58.5%	61%	+10% (61%)
Transfer <sup>10</sup>	70.5%	73%	75.5%	78%	+10% (78%)
Closing achievement gap (%) <sup>11</sup>	-12.5% (10.5% gap)	-12.5% (9% gap)	-12.5% (7.5% gap)	-12.5% (6% gap)	-50% (6% gap)

<sup>1</sup> students participate in at least two HIPs by graduation; baseline for this awaits the definition of CSUF HIP—estimated baseline is 25%.

<sup>2</sup> prepares them for professional endeavors in a global society; estimated baseline is 5%

<sup>3</sup> phased by level of information archiving and completeness of the process for each curricular and co-curricular units. The baseline is 10%.

<sup>4</sup> integrates academic, career and personal development components; baseline is 37% (+6.5% over 2013); 14,272 students were impact in fall 2014.

<sup>5</sup> Student Success Dashboard (SSD) becomes more robust by adding special groups; baseline undergraduate broken down by diversity indicators.

<sup>6</sup> Educational Advisory Board Predictive Analytics is used in association with intrusive advisement; baseline is students with 75-90 units in 4 colleges and plus all existing mandatory advisement processes; tracking is at the college level.

<sup>7</sup> Campus Labs is an enterprise student support database—CSUF uses *Compliance Assist* (CA) to collect data for units assessment; the baseline is 50% of units in Student Affairs and Academic Affairs using CA.

<sup>8</sup> measured by improving first-to-second year persistence at a level to support achieving 5-year graduation (24 units going into second year); baseline is 80%.

<sup>9</sup> defined as six-year graduation rate comparing the Fall 2012 cohort to the Fall 2006 cohort; Fall 2006 cohort baseline is 51.1%.

<sup>10</sup> defined as four-year graduation rate comparing Fall 2014 cohort to Fall 2008 cohort; Fall 2008 cohort baseline is 67.7%.

<sup>11</sup> this refers to underrepresented group vs. overall 6-year graduation rate achievement gap; -50% means reducing the 12% graduation achievement gap to 6%.

CSUF arrived at the final targets as described below. (The annual targets are primarily a proportional rate of achievement based on steady progress in each category of innovation.)

1. Curricular High-impact Practices. The target for having 75% of all students complete at least two HIPs before graduation is based on publications that show a correlation between increased experience with HIPs and a student's learning, persistence, and likelihood of graduation [H1]. Having estimated that only 25% of CSUF students graduating in 2013 had experienced at least two HIPs, CSUF elected to set a stretch goal that required significant effort. We are creating and piloting programs to incentivize faculty and students to engage in HIPs (these include the REACH, General Education Pathways, and ASCEND STEM programs), and we are creating processes for collecting the necessary data on student participation. To collect data about student participation in these programs we will create class attributes in our Common Management System (CMS). This action will be taken during 2015 as we approve the curricular activities to be included in the REACH, General Education Pathways, and ASCEND STEM programs. Co-curricular activities that are part of REACH, GE Pathways, or ASCEND STEM will appear on a co-curricular transcript—it is a novelty that only HIP-approved activities are on this transcript as most campuses include only self-reported student information of participation in co-curricular activities that involve little or no quality control.

2. Co-Curricular Experiential Learning. There is considerable evidence that involvement on campus and in the community significantly improves persistence [H2]. CSUF is responding to these data by tracking two types of co-curricular experiential learning (CEL). CSUF is creating a co-curricular transcript, with quality learning equivalent to traditional curricular transcript, therefore only impactful CEL activities will be approved for REACH. However, engagement in service learning opportunities, volunteer activities, self-arranged internships, and the like—offered by non-REACH programs like *Get Involved* and Center for Internship and Community Engagement (CICE)—also have value. This data will continue to be reported and used to measure the value of this set of activities. Despite our ability to report cumulative hours of community service by CSUF students, we are not tracking individual student activities and therefore cannot reliably estimate a percentage of student body involvement. So, we roughly estimate a baseline of 5% and set a target of having 25% of all students engaging in non-REACH experiential learning activities as a target that requires significant new intervention. These data are collected into Campus Labs *Compliance Assist* software [H3].

3. Assessment. Quality assurance for our degree programs targets 100% full participation in assessment; the importance of quality cannot be compromised. The estimated baseline for full participation is only 10%, so it will be a challenge to reach 100% by 2018 [H4]. Data are to be tracked by Campus Labs *Compliance Assist* software.

4. Advisement. The mandatory advisement program baseline is 37% set by Fall 2014 data. The target of 75% requires doubling of that level of intervention [H5]. By 2020, we expect to have all students participating in mandatory advisement.

5. Data-tracking. Institutional Research and Analytical Studies (IRAS) is responsible for the Student Success Dashboard [H6]; Predictive Analytics is a collaboration of Educational Advisory Board, CSUF IT, and Academic Programs [H7]; and Campus Labs *Compliance Assist* is a collaboration of both Office of Assessment and Educational Effectiveness and Student Affairs with Campus Labs [H8]. IRAS tracks data on persistence, graduation rates and closing achievement gaps using markers placed in the Common Management System. Other databases will be used as described for each innovation listed above.

## APPENDICES

(Please see BOOKMARKS for links to each individual appendix.)

### APPENDIX A

(for Letters from CEOs of each institutions on the List of Participants)

### APPENDIX B

(for materials in ITEM 3— *Past Key Policies, Practices and Systems*  
10 pages max)

### APPENDIX C

(for materials in ITEM 4— *Present Key Policies, Practices and Systems*, 15 pages max)

### APPENDIX D

(for materials in ITEM 5— *Future Key Policies, Practices and Systems*, 10 pages max)

### APPENDIX E

(for materials in ITEM 6— *Impact of Changes on Affordability*, 5 pages max)

### APPENDIX F

(for materials in ITEM 8— *Supporting a Culture of Innovation and Adaptability*, 10 pages )

### APPENDIX G

(for materials in ITEM 9— *Engaging Stakeholders*, 10 pages max)

### APPENDIX H

(for materials in ITEM 12— *Evaluation Targets*, 10 pages max)

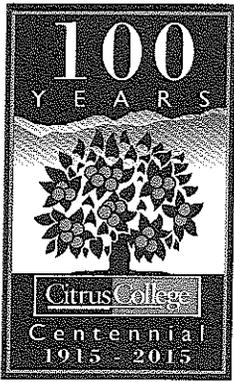
*Here is a list of our partner and a link to the partnership projects. The Letters of Support follow in the same order as this project list.*

**Community Colleges:**

1. Citrus College
  - (STEM)<sup>2</sup> Partnership, <http://stem2.fullerton.edu/>
2. Cypress College,
  - (STEM)<sup>2</sup> Partnership, <http://stem2.fullerton.edu/>
3. Fullerton College,
  - ENGAGE in STEM Partnership, <http://ed.fullerton.edu/c-real/spotlight/engage-in-stem/>
4. Santiago Canyon College,
  - (STEM)<sup>2</sup> Partnership, <http://stem2.fullerton.edu/>
  - Teacher Pathway Partnership, <http://calstate.fullerton.edu/inside/2011fall/Teacher-Pathway-Partnership.asp>
5. Santa Ana Community College.
  - TEST:UP Partnership, <http://testup.fullerton.edu/>
  - ENGAGE in STEM Partnership, <http://ed.fullerton.edu/c-real/spotlight/engage-in-stem/>

**High School Districts:**

6. Fullerton Joint Union High School District
  - Fullerton Collaborative
  - Early College Program, <http://gb.csba.org/images/programimages14/winners.pdf>
  - The Argumentation and Communication Leadership Academy, <http://gb.csba.org/images/programimages14/winners.pdf>
  - Center for Creativity & Critical Thinking, Project CREATE!, <http://cccts.fullerton.edu/team.html>
7. Santa Ana Unified School District.
  - Santa Ana Partnership, <http://www.fullerton.edu/partnerships/partnerships.asp>
  - ¡Adelante!, <http://www.fullerton.edu/partnerships/partnerships.asp>
  - Project MISS, <http://www.fullerton.edu/miss/>
  - Upward Bound, <http://www.fullerton.edu/sa/assessment/pdfs/2014/transition/2013-2014%20Upward%20Bound.pdf>



January 6, 2015

California Department of Finance  
Education Systems Unit – Innovation Awards  
915 L Street, 7<sup>th</sup> Floor  
Sacramento, CA 95814

To Whom It May Concern:

CITRUS COMMUNITY  
COLLEGE DISTRICT  
BOARD OF TRUSTEES

Mrs. Joanne Montgomery  
President  
Monrovia/Bradbury and  
portions of Duarte  
Representative

Mrs. Susan M. Keith  
Vice President  
Claremont and portions of  
Pomona and La Verne  
Representative

Dr. Barbara R. Dickerson  
Clerk/Secretary  
Azusa and portions of  
Duarte Representative

Dr. Edward C. Ortell  
Member  
Duarte and portions of  
Azusa, Monrovia, Arcadia,  
Covina and Irwindale  
Representative

Dr. Patricia A. Rasmussen  
Member  
Glendora and portions of  
San Dimas Representative

Ms. Fariyah Chowdhury  
Student Representative

Dr. Geraldine M. Perri  
Superintendent/President

I am pleased to provide this letter of support for California State University, Fullerton's (CSUF) application for the Awards for Innovation in Higher Education. We value our working relationship with CSU Fullerton and the progress we have made on joint projects such as the Strengthening Transfer Education and Matriculation in STEM ((STEM)<sup>2</sup>) Partnership.

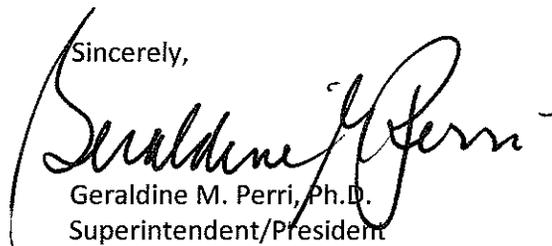
The (STEM)<sup>2</sup> project has focused on increasing the number of community college students ready to transfer in a STEM major to four-year universities. Several facets of the project have been instrumental in aiding our efforts to increase STEM completion and transfer rates at Citrus College, including provisions for supporting an expansion of our Supplemental Instruction program in STEM gateway courses; offering summer research experiences on the CSU Fullerton campus for our students; and providing streamlined transfer processes for students participating in the program.

Since the Spring 2013 term, 75 students have transferred from Citrus College as STEM majors to CSUF as (STEM)<sup>2</sup> participants. Our students are supported with a STEM Transfer Orientation, Family Day, and inclusion in the STEM Academic Transition Program (ATP). Data show that those students who participate in ATP are less likely to be placed on academic probation after their first term. Moreover, the (STEM)<sup>2</sup> staff ensures that our STEM transfer students are connected to campus resources, receive academic support, and remain on-track to earn a STEM degree.

While much has been accomplished, we strongly believe that that through a continued partnership with CSU Fullerton we can realize even larger gains, especially with respect to improving the likelihood of degree completion for first-generation, low-income and underrepresented student groups. Therefore, we offer our full support for CSU Fullerton's Awards for Innovation in Higher Education application as we are confident that funding from this award will help strengthen and support the programs that improve the success of our mutual students.

Should you need any further information, please do not hesitate to contact me.

Sincerely,



Geraldine M. Perri, Ph.D.  
Superintendent/President



*Minds. Motivated.*

**Dr. Robert Simpson**  
President

January 6, 2015

Robert Simpson, Ed.D., President  
Cypress College  
9200 Valley View Street  
Cypress, California 90630-5897

To Whom It May Concern:

Cypress College students have greatly benefited from our valued partnership with California State University, Fullerton. Joint ventures such as our (STEM)<sup>2</sup> Partnership (<http://stem2.fullerton.edu/>) have significantly supported our mission and provided academic opportunities for our students.

The (STEM)<sup>2</sup> Partnership project, which focused on outreach and recruitment, collaborative activities between our institutions in support of science education, and facilitated transfer processes, has contributed to student success by exposing future scientists to real research opportunities, including the opportunity to be published in scientific journals, opportunities to work side-by-side with practicing scientists, and by helping students to better understand the rigor and methods of scientific inquiry.

The (STEM)<sup>2</sup> Partnership has made significant contributions toward our effort to improve the success of our students, and, as indicated above, data that have been collected from this project demonstrates that success. We at Cypress College believe that our partnership with Cal State Fullerton can accomplish much more, especially with respect to improving the likelihood of degree completion for first-generation, low-income, and underrepresented student groups.

We wholeheartedly endorse and offer our full support for Cal State Fullerton's Awards for Innovation in Higher Education application, as the funding from this award will help strengthen and support the programs that improve the success of our mutual students.

Please contact Dr. Richard Fee, Dean of Science, Engineering and Mathematics (714 484-7152) if you have any questions. Thank you for your time and consideration.

Sincerely,

Robert Simpson, Ed.D.  
President

9200 Valley View St.  
Cypress, California 90630-5897  
Phone (714) 484-7308 • Fax (714) 761-3934  
North Orange County Community College District  
e-mail: [rsimpson@cypresscollege.edu](mailto:rsimpson@cypresscollege.edu)



January 6, 2015

To Whom it May Concern:

We at Fullerton Community College have valued our partnership with California State University, Fullerton and the progress we have made on joint projects such as ENGAGE in STEM Partnership (<http://ed.fullerton.edu/c-real/spotlight/engage-in-stem/>).

The ENGAGE in STEM Partnership project focused on initiatives to increase the number of Hispanic, low income, and other traditionally underrepresented individuals who transfer to the university as STEM majors, future math and science teachers, and to develop model transfer and articulation agreements. This collaboration has resulted in student success as follows: (1) FC STEM transfer majors have increased over 60% with a graduation completion rate of over 70%; (2) an A.A. degree/Bachelor of Arts in Earth Science pathway for future science teachers has been developed.

ENGAGE in STEM Partnership has also made significant contributions toward our effort to improve the success of our students, and, as indicated above, data that have been collected from this project demonstrates that success. Yet we at Fullerton Community College feel strongly that our partnership with Cal State Fullerton can accomplish much more, especially with respect to improving the likelihood of degree completion for first-generation, low-income, and underrepresented student groups.

Therefore, we offer our full support for Cal State Fullerton's Awards for Innovation in Higher Education application, as the funding from this award will help strengthen and support the programs that improve the success of our mutual students.

Please contact Karen Rose, Director, Special Programs, (714) 992-7068, [krose@fullcoll.edu](mailto:krose@fullcoll.edu), if you have any questions. Thank you for your time and consideration.

Sincerely,

Rajen Vurdien, Ph.D., MBA  
President

RV:mt



# Santiago Canyon College

8045 East Chapman Ave. • Orange, CA 92869-4512 • (714) 628-4900 • Fax: (714) 628-4723 • [www.sccollege.edu](http://www.sccollege.edu)

## Orange Education Center

1465 N. Batavia Street • Orange, CA 92867-3504 • (714) 628-5900 • Fax: (714) 628-5909 • [www.sccolledge.edu](http://www.sccolledge.edu)

January 5, 2015

To Whom It May Concern:

We at Santiago Canyon College have valued our partnership with California State University, Fullerton and the progress we have made on joint projects such as the (STEM)<sup>2</sup> Partnership (<http://stem2.fullerton.edu/>).

The (STEM)<sup>2</sup> Partnership project, which focused on research collaboration between SCC students and faculty at Cal State Fullerton, has contributed to student success by increasing highlighting transfer opportunities within the STEM disciplines for first generation college students, smoothing the transfer process, and demonstrating the value of peer mentoring.

The (STEM)<sup>2</sup> Partnership also has made significant contributions toward our effort to improve the success of our students, and, as indicated above, data that have been collected from this project demonstrates that success. Yet we at Santiago Canyon College feel strongly that our partnership with Cal State Fullerton can accomplish much more, especially with respect to improving the likelihood of degree completion for first-generation, low-income, and underrepresented student groups.

Therefore, we offer our full support for Cal State Fullerton's Awards for Innovation in Higher Education application, as the funding from this award will help strengthen and support the programs that improve the success of our mutual students.

Please contact Dr. John Hernandez, SCC Vice President of Student Services ([Hernandez\\_John@sccollege.edu](mailto:Hernandez_John@sccollege.edu); 714-628-4886) if you have any questions. Thank you for your time and consideration.

Cordially,

John Weispfenning, Ph.D.  
President

CC: John Hernandez

PRESIDENT: John Weispfenning, Ph.D.

RANCHO SANTIAGO COMMUNITY COLLEGE DISTRICT BOARD OF TRUSTEES: Claudia C. Alvarez • Arianna P. Barrios • John R. Hanna • Lawrence R. "Larry" Labrado  
Jose Solorio • Nelida Mendoza Yanez • Phillip E. Yarbrough

CHANCELLOR: Raúl Rodríguez, Ph.D.



**CELEBRATED PAST. BOUNDLESS FUTURE.**

January 7, 2015

1530 West 17th St. • Santa Ana, CA 92706 • (714)564-6000 • [www.sac.edu](http://www.sac.edu)

Michael Cohen  
Director, California Department of Finance  
Education Systems Unit – Innovation Awards  
7<sup>th</sup> Floor  
915 L Street  
Sacramento, CA 95814

Dear Mr. Cohen:

Santa Ana College has been collaborating with California State University Fullerton for over thirty years to create an effective path to the B.A. for students regionally. The university's strategic commitment to the greater Santa Ana area has been steadfast in times of abundance and times of scarcity. As founding members of the Santa Ana Partnership, Fullerton's leaders in the administration and the faculty have been aggressive and creative in breaking status-quo patterns and structures that did not address equity and access gaps, creating out-of-the box strategies that are transformational for the thousands of students who benefit each and every year.

Examples of this tremendous legacy of collaborative effort include the early and sustained work involved in creating a fast track to becoming a certificated teacher in the K-12 system. Our future teacher work with CSUF helped students accelerate their eligibility to become teachers locally, which has had a compounded effect on diversifying the local teaching labor force. Our Center for Teacher Education is closely connected with the upper division school at CSUF and hundreds of students a year participate. Another strong area of focus in our collaboration is the pipeline to careers in a constellation of STEM fields, which we have advanced through cooperative faculty work and extensive opportunities for students to engage in research and advanced studies at CSUF enroute to the B.A. and graduate studies. Approximately twenty CSUF graduate students and interns are supervised in their research and field studies at SAC each academic year, building academic and social capital for the region. Together we have leveraged millions of dollars in supplemental funding that has allowed us to provide first generation college students with the academic and co-curricular support needed to achieve their professional and educational goals.

Finally, working in conjunction with the highlights above is the creation of transfer pathways to CSUF for both SAUSD and SAC students—an inspiring promise to all local seniors that a college degree is within reach for them and has the power to change the future of our community. This pathway opens the door to the B.A. for over 2,000 local students a year from SAUSD and encourages SAC students to advance to upper division studies. As the number one transfer destination for SAC students, CSUF is an indispensable partner to the college and the community we serve and we enthusiastically support their candidacy for the Innovation Awards in Higher Education.

Sincerely,

Erlinda J. Martinez, Ed.D  
President

**PRESIDENT:** Erlinda J. Martinez, Ed.D.

**RANCHO SANTIAGO COMMUNITY COLLEGE DISTRICT BOARD OF TRUSTEES:**

Claudia C. Alvarez · Arianna P. Barrios · John R. Hanna · Lawrence R. "Larry" Labrado · Jose Solorio · Nelida Mendoza Yanez · Phillip E. Yarbrough

**CHANCELLOR:** Raúl Rodríguez, Ph.D.



**FULLERTON JOINT UNION HIGH SCHOOL DISTRICT**  
1051 West Bastanchury Road • Fullerton, California 92833-2247

(714)870-2801  
FAX (714)870-2807

[www.fjuhsd.net](http://www.fjuhsd.net)

**Office of the Superintendent**

January 7, 2015

To Whom it May Concern:

We at Fullerton Joint Union High School District have valued our partnership with California State University, Fullerton and the progress we have made on joint projects such as Early College Partnership program (<http://gb.csba.org/images/programimages14/winners.pdf>).

The Early College Partnership program focuses on providing the launching pad from which under-represented/first-generation college students can have the tangible “leg-up” they need to bridge the educational gap and establish a new family heritage of higher education and opportunity.

The Buena Park High School Early College Partnership (ECP) program is rooted in the fundamental goals of the District, which is to provide students an academically rigorous curriculum that will prepare them for post-secondary education. The ECP program provides students the honest/real opportunity to “realize tomorrow’s dreams today” by providing them the rare opportunity to enroll into actual college courses within their normal high school day, on their high school campus. By successfully completing the ECP courses, students earn UC-CSU-transferrable college units prior to graduating from high school, at no cost to the student. Buena Park High School serves a student population comprised of 75% Title 1 (Free/Reduced Lunch) and whose family data indicates that 72% have not received some form of post-secondary education. The key part of the ECP program lies in its name, “Partnership.” It is through the joint partnership of California State University, Fullerton that Buena Park High School students are currently able to earn up to 41 UC-/CSU-transferrable units, which is anticipated to grow up to 60 units within the next two years.

The ECP program has contributed to student success by the evidence of academic rigor, student college awareness, post-secondary skills, and general self-esteem, including:

- **Level of Critical Writing:** Through the College Reading and Composition classes (Reading 201, 202, 290, or English 100), teachers witness a depth of knowledge, reflection, and grammar that is clearly at the college level and atypical of high school students.
- **Levels of Advanced Math and Science Skills:** Students enrolled in any of the math courses (Calculus 150A, Calculus 150B, or Calculus 250) are prepared above and beyond their counter parts as they prepare to transition into engineering, architecture, business, medicine,

*Excellence in Education since 1893*

**SERVING BUENA PARK, FULLERTON, LA HABRA, LOWELL & YORBA LINDA**

January 7, 2015

Page 2

etc. Veterinarian 100 and Horticultural 101 science classes also provide students rigorous, hands-on opportunities to develop their minds at the college level. Engineering 100, launching in 2015/16, and science courses (Biology 100 and Chemistry 101) are in the planning stages to come on-line in 2015/16 and 2017 respectively.

- Critical Thinking and Articulation: Social Science courses (Psychology 101 and Economics 100) served as the fertile ground for the collaboration of scientific knowledge, critical understanding and thinking, and real world application of these skills. Additional Social Science classes (History 110 and 170) are in the final planning stages for 2015/16.
- Maturity: Students continue their social-emotional development and intellectual growth through Speech 100 and Library Sciences 100. Simply witnessing their college-level speeches and the confidence in their faces tells the whole story.

The Early College Partnership program has also made significant contributions toward our effort to improve the success of our students, and, as indicated above, data that have been collected from this project demonstrates that success. Yet we at Fullerton Joint Union High School District feel strongly that our partnership with California State University, Fullerton can accomplish much more, especially with respect to improving the likelihood of degree completion for first-generation, low-income and underrepresented student groups.

Therefore, we offer our full support for California State University, Fullerton's Awards for Innovation in Higher Education application, as the funding from this award will help strengthen and support the programs that improve the success of our mutual students.

Please contact Executive Director of Administrative Services Jennifer Williams at (714) 870-2803 or Buena Park High School Principal Jim Coombs at (714) 992-8602 if you have any questions. Thank you for your time and consideration.

Sincerely,



Ken Stichter, Ed.D.  
Interim Superintendent



# Santa Ana Unified School District

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Richard L. Miller, Ph.D.  
Superintendent

To Whom It May Concern:

We at Santa Ana Unified School District have valued our partnership with California State University, Fullerton and the progress we have made on joint projects such as Santa Ana Partnership (<http://www.fullerton.edu/partnerships/partnerships.asp>).

Our community is well positioned to provide the state and the nation with a model of coordinated talent-development that aligns assets across institutional and organizational boundaries to transform the conditions of education and the outputs of educational institutions. Our ability to gather, analyze, and act on data that highlight victories and vulnerabilities in relation to our overall goals combines with the boundary-spanning culture of the Partnership to accelerate the time from initial analysis of problems to action, refinement, and scaled implementation.

These capacities have served the Partnership well over its three decades of educational attainment work, and I am extremely proud to note that the foundation for much of the progress has been dramatically expanded by changes to policy and practice in SAUSD that include, but are not limited to, a commitment to graduating students from high school academically ready for college-level work, the continual expansion of opportunities to start college early through the Partnership, and linking strategic plans across the educational segments.

Santa Ana Partnership has also made significant contributions toward our effort to improve the success of our students, and, as indicated above, data that have been collected from this project demonstrates that success. Yet we at Santa Ana Unified School District feel strongly that our partnership with Cal State Fullerton can accomplish much more, especially with respect to improving the likelihood of degree completion for first-generation, low-income, and underrepresented student groups.

Therefore, we offer our full support for Cal State Fullerton's Awards for Innovation in Higher Education application, as the funding from this award will help strengthen and support the programs that improve the success of our mutual students.

Please contact me if you have any questions. Thank you for your time and consideration.

Sincerely,

A handwritten signature in cursive script that reads "Dawn Miller".

Dawn Miller, Assistant Superintendent of Secondary Education  
Santa Ana Unified School District

1601 E. Chestnut Ave., Santa Ana, CA 92701, (714) 558-5501

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## BOARD OF EDUCATION

John Palacio, President • Cecilia "Ceci" Iglesias, Vice President  
Valerie Amezcua, Clerk • José Alfredo Hernández, J.D., Member • Rob Richardson, Member

[B1] California State University, Fullerton Strategic Plan 2013-2018, [http://planning.fullerton.edu/planning/\\_resources/pdf/CSUF-Strategic-Plan.pdf](http://planning.fullerton.edu/planning/_resources/pdf/CSUF-Strategic-Plan.pdf)

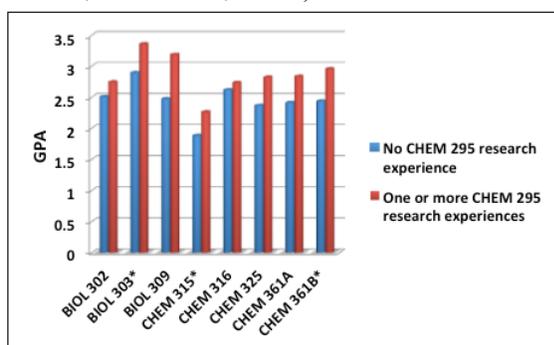
[B2] Kuh, G. *High-impact educational practices: What they are, who has access to them, and why they matter*, (Washington, DC: AAC&U, 2008). [http://www.aacu.org/sites/default/files/files/hip\\_tables.pdf](http://www.aacu.org/sites/default/files/files/hip_tables.pdf)

The AAC&U list of high-impact practices (HIPs) includes first-year seminars and experiences, common intellectual experiences, learning communities, writing-intensive courses, collaborative assignments and projects, undergraduate research, diversity/global learning, service learning/community-based learning, internships, and capstone courses and projects.

[B3] *Undergraduate Research.*

a) *Undergraduate Research Training Programs.* Some, but not all, of STEM students participated in a formal undergraduate research training program aimed at low-income, first-generation and underrepresented groups like: 1) CSU-funded Biology Undergraduate Research Student Training (BURST), 2) CSUF-funded Research Career Preparatory program (RCP; 1 & 2 introduce lower-division students to research), 3) NIH-funded Minority Access to Research Careers (MARC U\*STAR) Scholars Program, 4) privately funded Howard Hughes Medical Institute (HHMI) Scholars Program, 5) state-funded Bridges to Stem Cell Research (BSCR) Scholars Program (3, 4 & 5 support research in biomedical fields), 6) NSF-funded Louis Stokes Alliances for Minorities Program (LSAMP) (supports research in physical sciences), 7) NSF UMEB-funded Southern California Ecosystems Research Program (SCERP) (supports research in ecology) and 8) USDA-funded Undergraduate Agriculture Community-based Research Experience (U-ACRE) (supports research in the social and natural sciences).

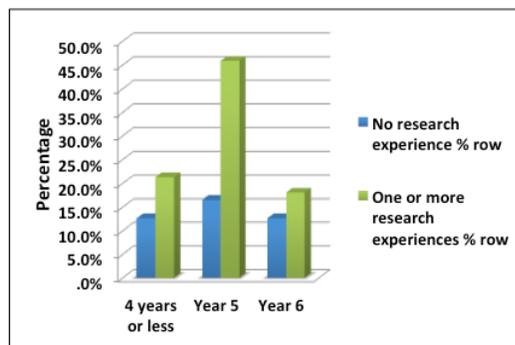
b) Koch, R.A. and Filowitz, M. (2012) White Paper: Outcomes of Two High-Impact Practices in the College of Natural Sciences & Mathematics (portions presented in the Scaling Up and Sustaining Pedagogies of Engagement Session, AAC&U Engaged STEM Learning, Miami, March 26, 2011).



**Figure 1. Effect of lower-division research participation on performance in upper-division gateway courses for biochemistry and chemistry majors.**

Chemistry and biochemistry majors, who were admitted in Fall 2004 (n=868) and engaged in at least one lower-division research experience by fall 2010 (n=40), performed better in both biology and chemistry gateway courses. The average improvement was 0.19 gpa. Asterisks denote statistically significant differences ( $P < 0.05$ ;  $n = 908$ ). Data are similar for biological science majors.

(Data were presented in the Scaling Up and Sustaining Pedagogies of Engagement Session, AAC&U Engaged STEM Learning, Miami, March 26, 2011.)



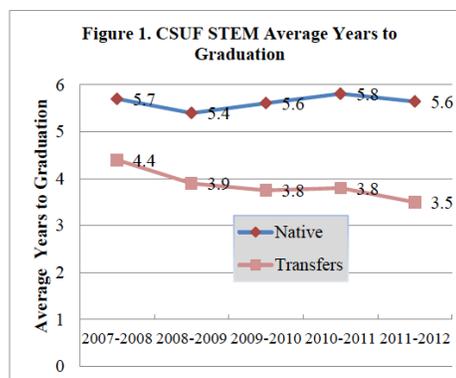
**Figure 2. Effect of research experience on graduation rates for biochemistry and chemistry majors.**

Students in any science or mathematics major, who were admitted in Fall 2004, engaged in at least one research experience by fall 2010, and graduated in four, five or six years, did so in higher proportions compare to their peers who did engage in research. The improvement for graduating in four, five and six year graduation was 169%, 278%, and 143% (n=42, 66, and 40), respectively. All comparisons show statistically significant differences ( $P < 0.05$ ).

(Data were presented in the Scaling Up and Sustaining Pedagogies of Engagement Session, AAC&U Engaged STEM Learning, Miami, March 26, 2011.)

[B4] *Smoothing high school and transfer student transitions.* Summary, goals and partners for TEST:UP, (STEM)<sup>2</sup> and HHMI programs.

TEST:UP (Talent Expansion in Science and Technology—An Urban Partnership) with Mt. San Antonio and Santa Ana Colleges, and (STEM)<sup>2</sup> (Strengthening Transfer Education & Matriculation in STEM) partnered with Citrus, Cypress and Santiago Canyon Colleges. Both focused on increasing the number of underrepresented minorities entering STEM majors and graduating from four-year institutions and offered supplemental instruction (SI) on CC campus, peer mentoring on CC and CSUF campuses, tailored electronic advising/counseling, tailored transfer orientation programs, and summer research bridge experience. The outcomes of TEST:UP for SI are included the data in [B5] below. In addition, TEST:UP increased



(STEM)<sup>2</sup> Summer Research Experience (SRE)

SRE 2012					
Total Students	Transferred	Still at CC	Transferred to CSUF	AB-540	
26	26	0	9	1	
	100%	0%	35%	4%	
Hispanic	White	Asian	Native American	African American	Other
8	11	5	0	0	2
31%	42%	19%	0%	0%	8%

SRE 2013					
Total Students	Transferred	Still at CC	Transferred to CSUF	AB-540	
35	31	4	17	2	
	89%	11%	49%	6%	
Hispanic	White	Asian	Native American	African American	Other
18	8	8	0	1	0
51%	23%	23%	0%	3%	0%

SRE 2014					
Total Students	Transferred	Still at CC	Transferred to CSUF	AB-540	
39	18	21	12	3	
	46%	54%	31%	8%	
Hispanic	White	Asian	Native American	African American	Other
20	8	10	0	0	1
51%	21%	26%	0%	0%	3%

Figure 2. Higher percentages of (STEM)<sup>2</sup> students transferred to STEM majors at 4-year universities compared to the norm. 100% of participants who have completed their AA degree at the time of the data collection have transferred compared to less than 40% for the typical CC STEM-oriented student. Note that those who remain at CC have not completed AA degrees yet. The number of Hispanics students participating in the program has increased progressively.

the number of students declaring STEM majors by >23% over four years exceeding the target of +2% per annum, increased the STEM transfers by 55% over four years exceeding the target of +5% per annum, increased the intensity of advisement for STEM transfers on all participating campuses, contributed to the rise in STEM student persistence among transfer students from 63.4% to 74.8% over four years, and played a significant role in decreasing the time to graduation by STEM majors at CSUF by nearly 1 year to 3.5 over four years (Figure 1 above).

For (STEM)<sup>2</sup> the summer research experience engaged about 10% of the total community college transfers into STEM majors. However, compared to non-(STEM)<sup>2</sup> participants from non-partnering campuses and to non-participants from partnering campuses, the participants transferred to 4-year universities at nearly twice the percentage and the percentage of those transfers who were Hispanics reached more than half the total (Figure 2).

Students who continued to participate in the program after transferring to CSUF were more likely to succeed than non-participants from the same campus (160%) and the non-participants from

any campus (110%; Figure 3 on following page).

Fall 2013 Cohort-After Fall 2013						
	Good Standing 2.0	Dean's List 3.0	Probation	Left STEM Major	Left CSUF	Left ATP
ATP (46)	34	14	12	0	0	5
	74%	30%	26%	0%	0%	11%
NON-ATP (13)	6	4	7	2	2	N/A
	46%	31%	54%	15%	15%	N/A
Total STEM Transfer Class (492)	331	57	104	35	79	N/A
	67%	12%	21%	7%	16%	N/A

Figure 3. Transfer student engaged in the (STEM): Academic Transitions Program (ATP) performed better than those from the same partner community colleges, but who did not get involved in ATP. ATP includes peer mentoring, special advisement, participation in discipline-based clubs, and a variety of professional development activities. The program participants are 40% more likely to be in good standing, half as likely to be on academic probation and none have left the university. Thus, the program is improving persistence by URM STEM majors.

HHMI Undergraduate Education Program also includes summer and weekend research experiences that promote the flow of students into research careers in the biomedical sciences. It offers 10-week summer research experience for Saddleback Community College graduates on their way to four-year institutions, 5-week summer research experience for local high school students and science teachers, and weekend research experience for community college and high school students and

teachers that introduces scientific literature and presenting findings in written formal reports and oral poster presentations. The outcome of the program is improved understanding, by both teachers and students, of how to perform laboratory research and awareness of opportunities for undergraduate research at CSUF.

[B5] *Supplemental Instruction: UMKC Model.* The International Center for Supplemental Instruction. <http://www.umkc.edu/asm/si/index.shtml>.

[B6] *Supplemental Instruction: CSUF Activities.* Moon, H.S., Sullivan, E., Hershey, J., Walker, S., Bonsangue, M., Filowitz, M., Fernandez, C., Unnikrishnan, R., & Delgado, V. (2013). *High-Impact Educational Practices as Promoting Student Retention and Success.* The Proceedings of the 9th Annual National Symposium on Student Retention, presented at the 9th Annual National Symposium on Student Retention (CSRDE-Consortium for Student Retention Data Exchange), San Diego, CA, November 4-6, 2013. [http://www.fullerton.edu/analyticalstudies/presentations/CSRDE2013\\_hip\\_moon\\_et\\_al.pdf](http://www.fullerton.edu/analyticalstudies/presentations/CSRDE2013_hip_moon_et_al.pdf)

Figure 4 and Table 3 (adjacent) illustrate the **narrowing the achievement gap** graph and values, respectively, for Supplemental Instruction in Evolution & Biodiversity, an introductory biology course and gateway to the biology major and required for all pre-health professions students regardless of major.

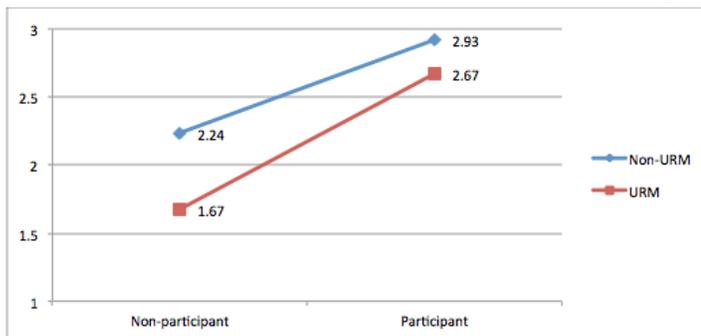


Figure 4: Interaction Effects (SI by URM) in Course Grade: Fall 07 – Fall 10 Total

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Previous GPA	83.243	1	83.243	69.163	.000
Participation	160.661	1	160.661	133.485	.000
URM	43.779	1	43.779	36.374	.000
Participation * URM	5.160	1	5.160	4.287	.039
Corrected Total	1721.432	1157			

a. R Squared = .194 (Adjusted R Squared = .191)

Table 3: Two-way (SI Participation X URM) Analysis of Covariance on Course Grades

[B7] *Freshman Programs.* Moon, H.S., Sullivan, E., Hershey, J., Walker, S., Bonsangue, M., Filowitz, M., Fernandez, C., Unnikrishnan, R., & Delgado, V. (2013). *High-Impact Educational Practices as Promoting Student Retention and Success.* The Proceedings of the 9th Annual National Symposium on Student Retention, presented at the 9th Annual National Symposium on

Student Retention (CSRDE-Consortium for Student Retention Data Exchange), San Diego, CA, November 4-6, 2013.

[http://www.fullerton.edu/analyticalstudies/presentations/CSRDE2013\\_hip\\_moon\\_et\\_al.pdf](http://www.fullerton.edu/analyticalstudies/presentations/CSRDE2013_hip_moon_et_al.pdf)

Moon et al. (2013) found that participation in Freshman Programs had a significant positive effect on first- and second-year retention, GPA and graduation rate. All students

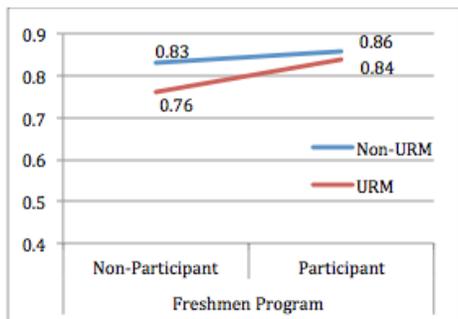


Figure 5: Interaction Effects (FLC by URM) in 1-Year Retention Rates

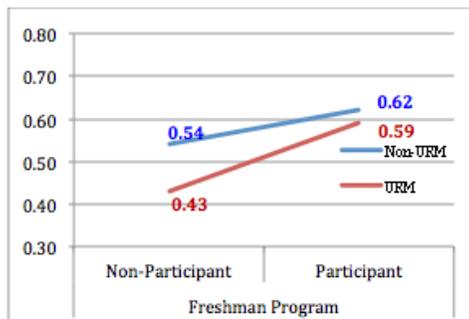


Figure 7: Interaction Effects (FLC by URM) in Six-Year Graduation Rates

benefited, with underrepresented students gaining the most. Among underrepresented students, the four-year graduation rate of the 2009 cohort was 22% for participants, compared with 11.5% for non-participants—a gain of nearly 100% (Figures 5, 7 and Table 5).

Effects	1-year				2-year				6-year			
	B	Wald $\chi^2$	p	odds ratio	B	Wald $\chi^2$	p	odds ratio	B	Wald $\chi^2$	p	odds ratio
High School GPA	.86	429.49	.000*	2.36	.82	505.47	.000*	2.26	1.1	480.46	.000*	2.86
Parent Education	.11	25.98	.000*	1.11	.08	20.58	.000*	1.09	.14	30.77	.000*	1.15
Freshmen Program	.22	8.71	.003*	1.25	.28	19.18	.000*	1.33	.32	17.78	.000*	1.38
URM	-.22	40.05	.000*	.80	-.19	36.16	.000*	.83	-.31	56.41	.000*	.733
Freshmen Program x URM	.19	3.21	.073	1.21	.11	1.46	.227	1.12	.24	4.18	.041*	1.28

Table 5: Logistic Regression for 1-yr Retention Rates, 2-yr Retention Rates, 6-yr Graduation Rates

[B8] eAcademy and course redesign.

**Removing Bottlenecks to Student Success**

**Six Faculty Teams Address the Challenge of High Demand-Low Success Rate Courses**

Aug. 29, 2013 <http://news.fullerton.edu/2013fa/Reducing-Bottleneck-Courses.asp>



Provost José L. Cruz, vice president for academic affairs, addresses a group of Cal State Fullerton faculty members who have received funding in support of program proposals geared to reducing the number of bottleneck courses on campus.

... All 23 CSU campuses were invited to submit proposals. CSUF faculty members submitted six proposals involving 10 courses — and received funding for all of them.

From the CSU, the CSUF teams received a total of \$359,342 in one-time funding for *course redesign*. Supplemental Instruction proposals garnered \$458,000 to the campus as baseline funding.

"We weren't allowed to submit any more,"

said Provost José L. Cruz, speaking before an Aug. 22 assembly of faculty teams who had submitted proposals.

"I think the reason we were so successful is that our faculty had already been working on solutions to these problems. The groundwork was

laid, and our faculty is committed to working through these problems.

"Now is the time to review and look over how these courses may be redesigned to ensure more students have the opportunity to be successful," Cruz continued. "That said, rigor should not be sacrificed for improved course outcomes.

"The state is starting to focus on performance-based funding, rather than the number of students that campuses attract," said Cruz. "I think we're going to see more of this. For example, in the state of Tennessee, funding is based on graduation rates. And there are bonuses if you close the achievement gaps," he noted.

Beyond California's efforts, Cruz said that "the federal government is already putting forth proposals to do the same. The idea is that universities that do the best jobs will get more funding and more Pell grants. The focus will be increasing graduation rates, closing achievement gaps and keeping down tuition costs.

"The work you do over the coming year will have huge implications, not only for CSUF and other CSU campuses, but for campuses throughout the nation," he continued. "The goal is to look at how different courses or solutions are developed, and spread that knowledge across the system, state and, eventually, the nation. A lot is riding on the work you're embarking upon this year."

Funding for CSU course redesign and academic success was awarded to the following:

- **E-Advisement**

Nancy Dority, assistant vice president, enrollment services

- **Supplemental Instruction**

Susama Barua, associate dean, College of Engineering and Computer Science

Martin Bonsangue, professor of mathematics

Todd CadwalladerOlsker, associate professor of mathematics

Mark Filowitz, associate dean, College of Natural Sciences and Mathematics

Sheryl Fontaine, acting dean, College of Humanities and Social Sciences

Philip Janowicz, assistant professor of chemistry and biochemistry

Morteza Rahmatian, associate dean of academic programs, Mihaylo College of Business and Economics

Raman Unnikirshnan, dean, College of Engineering and Computer Science

Sean Walker, associate professor of biological science and chair, Academic Senate

Rochelle Woods, director, student academic services

- **Bottleneck Course Redesign**

*Math 115 Course Redesign*

Mathematics faculty members — Todd CadwalladerOlsker, Cherie Ichinose and Margaret Kidd

*Biology 101 Course Redesign*

Biological science faculty — Megan Anduri, Kathryn Dickson, Cindy Duong, Krista Henderson and Maryanne Menvielle

*Biology 171 Course Redesign*

Faculty members Kathryn Dickson, Jennifer Burnaford, Merri Lynn Casem, Math

Funding recipients, including mathematics professor and 2010-11 Outstanding Professor Award recipient Martin Bonsangue, listen as José L. Cruz, provost and vice president for academic affairs, speaks on the importance of their proposals.



Cuajungco, Bill Hoese, Alison Miyamoto, Nilay Patel, Melanie Sacco, Sean Walker and Danielle Zacherl

*History lower-division course redesign*

History faculty members — Gayle Brunelle, Kate Burlingham, Nancy Fitch, Volker Janssen, Jonathan Markley and Lynn Sargeant

*Political Science 100 redesign*

Political science faculty members — Pam Fiber, Scott Spitzer and Stephen Stambough

*Chemistry 120B redesign*

Chemistry and biochemistry faculty members — Michael Bridges, Paula Hudson, Scott Hewitt and Zhuangjie Li

- **E-Academy Leaders**

*Organic Chemistry* — Philip Janowicz, assistant professor of mathematics

*Mathematics* — Martin Bonsangue, professor of mathematics

- **E-Academy Participants**

*Reading (critical thinking)* — Julian Jeffries, assistant professor of reading

*Math (college algebra)* — Mortaza Jamshidian, professor of mathematics

*Physics faculty members* — Greg Childers, James Feagin, Geoffrey Lovelace, Mike Loverude, Jocelyn Read and Joshua Smith

**[B9] Community Service Awards.**

a) CSUF Alumni Awarded Presidential Volunteer Service Award.

<http://bizblogs.fullerton.edu/entrepreneurship/2014/11/21/csufulumni-awarded-presidential-volunteer-service-award/>;

b) *2014 Community Engagement Award.* Cal State Fullerton was one of five U.S. colleges and universities to be honored with the 2014 Community Engagement Award, an annual recognition of higher education institutions for their leadership and innovation in civic engagement; and

c) *President's Higher Education Community Service Honor Roll.* Highest National Honor Awarded for Sixth Consecutive Year, 1.4 million hours of service in 2011-12 recognized by The President's Higher Education Community Service Honor Roll, <http://www.fullerton.edu/cice/Communityengagement.html#Washington%20Center>.

Most of the hours reported in Cal State Fullerton's Honor Roll applications are performed by students enrolled in courses that provide practical learning experiences outside the classroom. These courses include internships and externships, service-learning, practicums and fieldwork.

**[B10] Titan Student Involvement Center (TSIC).**

Commitment to Student Engagement: California State University, Fullerton provides a holistic education where learning occurs in and out of the classroom.

**User Data (Titan Student Involvement Center Database):**

All information was obtained from the Titan Student Involvement Center Database from the inception of the database to June 30, 2014.

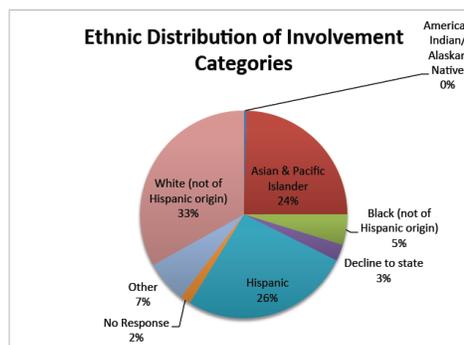
**University Verified Data**

This section describes the number of individuals who have Titan Pride Records with University Verified Data Sources.

Data Sources	Male	Female	Total
Campus Employment	25,116	16,527	41,643
Student Clubs/Organization "Cabinet" (five students)	3,514	4,464	7,978
Student Club Sports "Paid-Active"	802	522	1,324
LearnerWeb (Student Training)	2,664	1,479	4,143
CICE database (Acad Internship/Svc Learning/Project SHINE)	7,909	2,826	10,735
Volunteer Management System (Signed-up for Events)	51	121	172

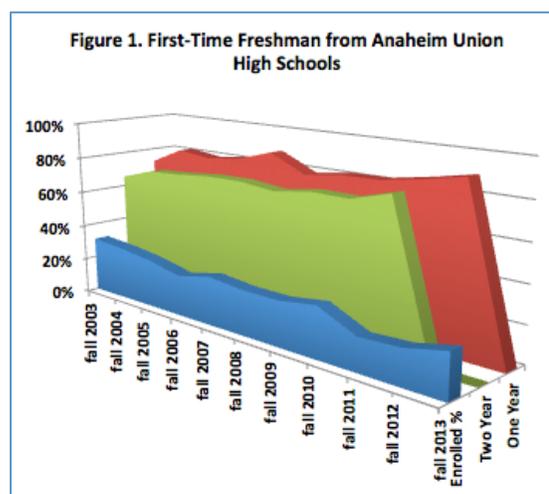
Curricular and co-curricular experiences exist to optimize learning and to create active participation by students at the university. Through these experiences, students develop a commitment to intellectual inquiry, prepare for challenging professions, strengthen relationships to their community and contribute productively to society. Curricular programs combine the best of current practice, theory, and research to integrate professional studies with applied learning experiences. Co-curricular experiences engage students in planned and purposeful learning outside of the formal curriculum that supports the exploration, application and mastery of knowledge, skills, and abilities. Combined, these experiences foster collaborative relationships, professional success, a vibrant campus life, active civic participation, and engaged alumni. Curricular and co-curricular experiences affirm the university’s commitment to student engagement in diverse learning opportunities that positively contribute to students’ success.

**Program Overview:** The Titan Student Involvement Center is an online hub for student involvement and activities center that is available through the student portal. The goal of the center is to create a community of engagement and increase student involvement here at CSU Fullerton. Moreover, TSIC demonstrates the importance of having a co-curricular transcript for students to track their involvement. The table above shows the engagement in different TSIC associated activities broken out by gender and the adjacent figure shows the ethnic breakdown of the student participants.



**[B11] Educational Partnerships.** Cal State Fullerton is dedicated to fostering the next generation of college graduates through intersegmental partnerships with local communities. These partnerships work with students and their families, teachers, counselors, and administration to foster a college-going culture and provide opportunities to help students progress onto higher education, and be successful in the baccalaureate and beyond. Fifty to a hundred CSUF students have participated as peer coaches in these programs—at HIP for them, and a profound influence on the pre-college participants as the data show.

**Anaheim Collaborative for Higher Education:** The Anaheim Collaborative for Higher Education aims to create a seamless intersegmental pipeline to help students progress onto higher education, and be college and career ready. The Anaheim Collaborative is a partnership with schools, school districts, the City of Anaheim, local colleges and universities, and community-based partners. The Anaheim Collaborative actively engages students, parents, teachers, faculty, administrators, and community members to foster 21<sup>st</sup> Century learning opportunities that embed the 4 C’s including Critical Thinking, Communication, Collaboration, and Creativity and a college-going culture for all students. Students are exposed to the various options to attend higher education and are supported with a roadmap to college and career success. Since



Since

2003, enrollments from AUSHD have increased 33%. Although yield has held fairly steady, the percentage of student persisting following year-1 and year-2 have steadily increased, indicating that we are retaining a greater percentage of these students each year (Figure 1).

Cal State Fullerton provides Anaheim with several programs:

- GEAR UP strives to increase the number of underrepresented students from low-income backgrounds who enter and succeed in postsecondary education. In partnership with Anaheim Union High School District, the project serves a cohort of students beginning the 7th grade and follows their successes through high school graduation. A six-year was funded in 2011 and serves 1,200 students from Magnolia, Savanna, and Western high schools.
- Talent Search encourages and assists eligible high school students with the knowledge and skills to pursue a post-secondary education. CSUF Talent Search Program serves nearly 600 participants annually from four high schools in the Anaheim Unified High School District: Anaheim, Magnolia, Katella, and Savanna high schools.
- Dual Language STEM Program is a program partners with AUHSD to develop a prototype project to boost achievement and engagement in mathematics and science among middle school students who speak English and Spanish. The project aims to build on students' linguistic, community and cultural resources to support their learning. The project is led by Mark Ellis, associate professor of secondary education, in collaboration with CSUF faculty members Sam Behseta and Armando M. Martinez-Cruz (mathematics) and Natalie Tran (educational leadership). Partners are Anaheim Union High School District, Anaheim City School District, Discovery Science Center and California Association for Bilingual Education.
- Mathematics Teacher to Master Teacher Fellows Program seeks to develop and prepare STEM (science, technology, engineering, and mathematics) undergraduates and professionals to become middle school or high school mathematics teachers. The project partners with AUHSD.

*Santa Ana Partnership:* The Santa Ana Partnership is a collaborative with Santa Ana Unified School District (SAUSD), Santa Ana College (SAC), California State University, Fullerton (CSUF), and University of California, Irvine (UCI) and is aimed at increasing student achievement, college-going rates, and success in higher education and beyond. The partnership, established in 1983, has yielded increasing larger classes of entering freshman since then, increasing nearly 70% over the past five years (Figure 2). A similar rise in numbers of community college transfers of SAUSD grads who attended SAC has occurred (Figure 3). The saw-tooth effect illustrates the alternating sizes of the fall and spring enrollments that occurred during the recession and illustrates that CSUF remained committed to meeting its commitment to community college transfers to the extent possible.

Figure 2. SAUSD entering CSUF

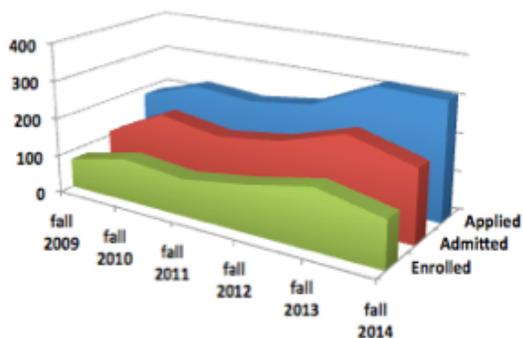
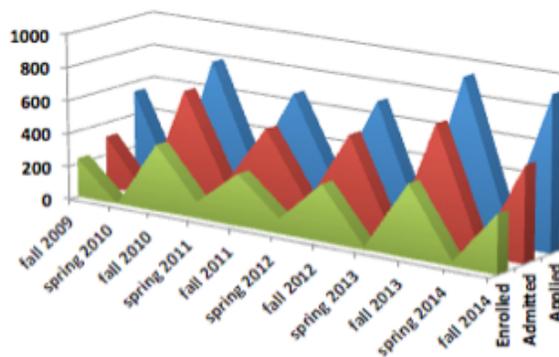


Figure 3. SAUSD entering CSUF via SAC

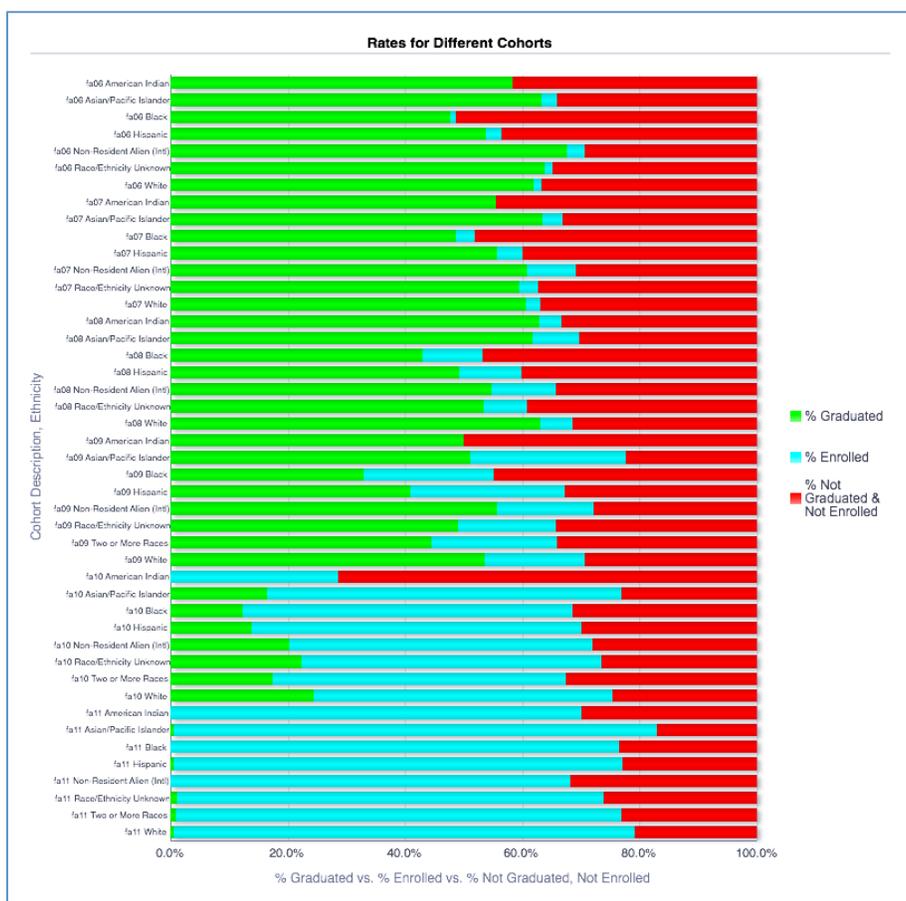


[B12] *Educational Partnerships and Women in STEM*. Hill, C., Corbett, C., and St. Rose, A. *Why so few? Women in science, technology, engineering and mathematics*. (Washington, DC: AAUW, 2010). <http://www.aauw.org/files/2013/02/Why-So-Few-Women-in-Science-Technology-Engineering-and-Mathematics.pdf>

[B13] a) *Graduation Rates*—An example of information available on SSD. <http://www.fullerton.edu/analyticalstudies/student/graduationrates/index.asp>

b) *The Student Success Dashboard (SSD) at Cal State Fullerton*. The CSUF SSD tracks and compares performance of both first-time freshman and new transfer students cohorts broken down by gender, ethnic-race, parents’ education, underrepresented status, college at entry, latest college, and prior institution type. It furthermore allows the users to drill down on a particular subgroup of students in order to obtain detailed actionable student-level information that can be used for, among other things, intervention. Ability to drill down to this detailed student-level information is limited to certain users through the application’s security settings. The underlying data warehouse is refreshed daily and so all performance indicators are up-to-date as of the most recent refresh of the warehouse. (Screen shot illustrates how accessible these data are.)

The dashboard was developed collaboratively by the Institutional Research and Analytical Studies (IRAS) and the Information Technology (IT) departments using the waterfall software-development life-cycle model. The dashboard was built using the Oracle Business Intelligence Enterprise Edition suite. The IRAS office originally defined the product requirements including the aggregate performance indicators, as well as the dashboard’s different tables and charts. The IT office then designed and implemented the underlying data warehouse and the ETL (Extract, Transform and Load) processes.



The IRAS performed the high-level query and dashboard design and implementation, as well as performing data validation and testing. The original product release as well as the follow-up maintenance releases went through the traditional development/staging/production environments.

The CSUF SSD tracks and compares performance of both first-time freshman and new transfer students cohorts broken down by gender, ethnic-race, parents' education, underrepresented status, college at entry, latest college, and prior institution type. It furthermore allows the users to drill down on a particular subgroup of students in order to obtain detailed actionable student-level information that can be used for, among other things, intervention. Ability to drill down to this detailed student-level information is limited to certain users through the application's security settings. The underlying data warehouse is refreshed daily and so all performance indicators are up-to-date as of the most recent refresh of the warehouse.

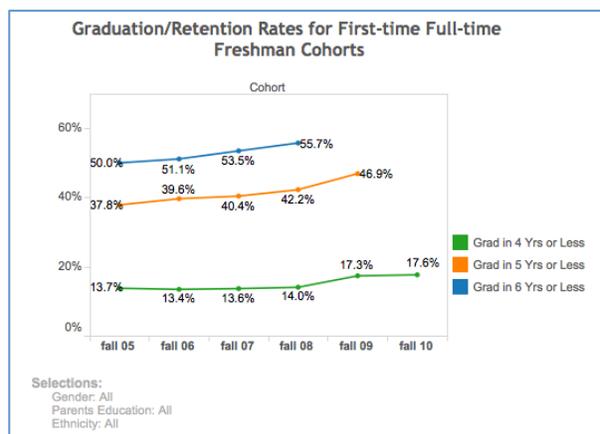
**[B14]** *Educational Advisory Board Student Success Collaborative Predictive Analytics Modeling.*

In August 2013, an agreement was signed for the purchase of a predictive analysis tool from the Education Advisory Board called Student Success Collaborative. The tool's purpose is in assisting campus advisors in assessing risk levels of students and to be proactive in providing support to these students. The Vice President for Information Technology led the efforts in securing the licensing for the product for 3 years and there was a kick-off meeting with faculty, advisors, and administrators on 25 September 2013. During the Fall 2013, IT developed two extracts from PeopleSoft Campus Solutions to populate the EAB system with student and course data. There is a 10-year file used to drive the baseline predictive analytics and a daily file to provide change updates. The extracts were completed in March 2014 after extensive data validation and testing.

[C1] *Access to Success*, Education Trust <http://www.edtrust.org/issues/higher-education/access-to-success>

[C2] *Rising graduation rates for freshman and upper-division transfer student groups.*

Compared to the 2005 cohort, recent graduating cohorts have had higher graduation rates that range from roughly 10-30 percent gain for all, women, men, first-generation, and Hispanic student groups (only *All* is shown in the adjacent figure).



[C3] REACH (*the HIP Program's name*).

Based on the uniqueness of CSUF. Utilizes and Promotes the tagline: Titans Reach Higher.

Involves students participating in multiple HIPs throughout their academic career by:

1. Engaging in Research that generates new knowledge
2. Participating in Experience-based learning
3. Investing time, energy over extended periods to become Active, engaged learners
4. Becoming a contributing member of the academic, local, regional, and global Community, and
5. Investigating and experiencing diverse cultures and perspectives through Human explorations.

#### DEFINING REACH TERMS: **Research**

Research, scholarly, and creative activities are projects that yield new knowledge in which students learn culture, commitment, and critical thinking. The benefits include: Scholarship of discovery; Systematic investigation; Use and design of innovative technologies; Empirical observation.

#### DEFINING REACH TERMS: **Experience**

Experienced-based learning. Includes: Internships; Laboratory, studio, field, clinically-based projects; Service learning; and, Student leadership and employment

#### DEFINING REACH TERMS: **Active Learning**

Students take an active role in the learning process. This is helped by: Intrusive advising and academic, personal, and career development; and, peer-to-peer and faculty mentoring; Examples are: residential education and capstone experiences.

#### DEFINING REACH TERMS: **Community**

Becoming an active, collaborative member of the CSUF academic and co-curricular community. Opportunities include: First year experience; Community service; Outreach; Learning communities; Collaborative projects; Service learning; and, General education pathways.

#### DEFINING REACH TERMS: **Human Explorations**

Explore cultures, life experiences, and world views by: Intercultural/international study; Culminating/capstone experiences; Integrates understanding across a students' academic career; Diversity initiatives; Study abroad; and, Public history.

[C4] High Impact Practice Definition and Assessment Rubric

**Definition:** High Impact Practices are transformational learning opportunities inside and outside of the classroom which require: meaningful and substantive learning interactions with faculty, staff, and students, or external entities; interactions with diversity; frequent and meaningful feedback; considerable time and effort; reflective and integrated learning; and, experiential learning opportunities.

	Program Characteristics	Description	Program Information	Assessment Measures	Methods	Results <i>(to be completed after program completion)</i>
P1	Nature of experience offered	Provide a general overview of the HIP program design, structure, and/or the nature of experience offered	Provide a general overview of the HIP program: <i>(narrative)</i>	Program participation and scale	n/a	Provide participation data (e.g. # of student participants, # of faculty participants; participation by college, participation by diversity - ethnicity, gender, SES, etc.)
P2	Anticipated student outcomes	Provide a characterization and a brief description of the anticipated "high impact"	Check the type(s) of impact on students: <input type="checkbox"/> Academic <input type="checkbox"/> Social <input type="checkbox"/> Ethical <input type="checkbox"/> Personal  Provide a brief description of the impact: <i>(narrative)</i>	Student outcome(s)	Describe the method(s) to be used to assess the anticipated "high impact"  <i>(Methods determined by program)</i>	Provide appropriate evidence demonstrating the anticipated "high impact" (e.g. knowledge gain, skill development, attitude change)
P3	Meaningful and substantive learning interactions with faculty, staff, students or external entities	Describe the quantity and nature of meaningful interactions between students and faculty/staff/peers/ external entities	Indicate the number of meaningful interactions each student has with faculty/staff/peers/external entities over the duration of the course or program: <input type="checkbox"/> Less than 10 interactions <input type="checkbox"/> 10-20 interactions <input type="checkbox"/> More than 20 interactions  Provide a brief description of the nature of the meaningful interactions: <i>(narrative)</i>	Quality of meaningful interactions with others	Describe the method(s) to be used to assess the quality of meaningful interactions with others  <i>(Methods determined by program, and/or university-wide survey)</i>	Provide appropriate evidence demonstrating the quantity and quality of meaningful interactions b/w students and faculty/staff/students/external entities (e.g. satisfaction, effectiveness)
P4	Opportunities for interactions with diversity	Describe the extent to which opportunities for students to interact with diversity (people, culture, environment, etc.) are included in the program	Indicate the extent to which opportunities to interact with diversity are included in the program: <input type="checkbox"/> None <input type="checkbox"/> Few opportunities <input type="checkbox"/> Ongoing opportunities <input type="checkbox"/> Several opportunities  Provide a brief description of the nature of the opportunities to interact with diversity: <i>(Narrative)</i>	Quality of interactions with diversity	Describe the method(s) to be used to assess the quantity and quality of interactions b/w students and diversity  <i>(Methods determined by program, and/or university-wide survey)</i>	Provide appropriate evidence demonstrating the quantity and quality of interactions b/w students and diversity (e.g. satisfaction, effectiveness)

[C5] *HIP Literature Citations.*

a) Kuh, G.A. (2008). High-impact educational practices: What they are, who has access to them, and why they matter. *AAC&U Report*. [www.aacu.org/store](http://www.aacu.org/store).

b) Kuh, G. D., Kinzie, J., Buckley, J. A., Bridges, B. K., & Hayek, J. C. (2006). What matters to student success: A review of the literature: Commissioned report for the National Symposium on Postsecondary Student Success: Spearheading a dialog on student success. Washington, DC: National Center for Education Statistics.

c) Tinto, V. (1987). *Leaving College: Rethinking The Causes and Cures of Student Attrition* (1st ed.), Chicago: University of Chicago Press.

d) Tinto, V. (1993). *Leaving College: Rethinking The Causes and Cures of Student Attrition* (2nd ed.), Chicago: University of Chicago Press.

[C6] Moon, S., Hershey, J., and McMahan, S., (2014). A case study of evaluating undergraduate research courses as high-impact practices fostering student-learning outcomes.

[http://www.fullerton.edu/analyticalstudies/presentations/AIR\\_UndergResearch\\_HIPS\\_Sunny\\_vFinal.pdf](http://www.fullerton.edu/analyticalstudies/presentations/AIR_UndergResearch_HIPS_Sunny_vFinal.pdf)

[C7] *U.S. Education Delivery Institute's delivery approach.*

[www.deliveryinstitute.org/delivery-approach](http://www.deliveryinstitute.org/delivery-approach)

[C8] a) Tinto, V. (1993). *Leaving College: Rethinking The Causes and Cures of Student Attrition* (2nd ed.), Chicago: University of Chicago Press.

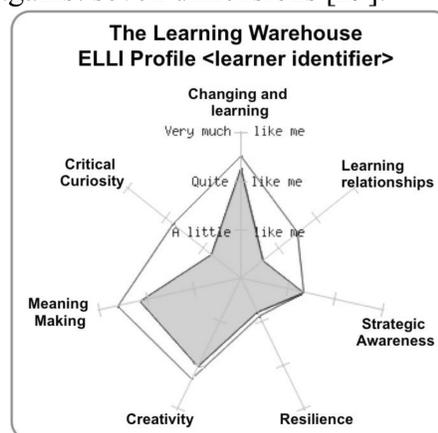
b) Heisserer, D. L. & Parette, P. (2002). Advising at-risk students in college and university settings. *College Student Journal*, 36(1), 69-84.

[C9] a) Buckingham Shum, S. and Deakin Crick, R. (2012). Learning dispositions and transferable competencies: pedagogy, modeling, and learning analytics. *Proc. 2<sup>nd</sup> International Conference on Learning Analytics & Knowledge*, (29 Apr-02 May, Vancouver, BC). ACM Press: New York.

b) Excerpt from Godfrey, P., Deakin Crick, R. and Huang, S. (2014). Systems thinking, systems design and learning power in engineering education. *International Journal on Engineering Education* 30:112-127.

**A Brief Explanation of ELLI**...An extensive literature review informed the development of a self-report questionnaire called **ELLI (Effective Lifelong Learning Inventory)** whose internal structure was factor analyzed, and validated through loading against seven dimensions [29].

These dimensions have been since validated with diverse learner groups, ranging in age from primary school to adults, demographically from violent young offenders and disaffected teenagers, to high achieving pupils and professionals, and culturally from middle-class Western society to Indigenous communities in Australia [31]. The inventory is a self-report web questionnaire comprising 72 items in the schools version and 75 in the adult version [32]. It measures what learners say about themselves in a particular dimension of learning power at a particular point in time. A brief description of the seven dimensions is set



out below, with three examples from the questionnaire shown for each dimension:

**1. Changing & Learning:** Effective learners know that learning itself is learnable. They believe that, through effort, their minds can get bigger and stronger, just as their bodies can and they have energy to learn (cf. [33]). The opposite pole of changing and learning is ‘being stuck and static’.

- *I expect to go on learning for a long time.*
- *I like to be able to improve the way I do things.*
- *I’m continually improving as a learner.*

Fig. 4. An ELLI learning power spider diagram generated from the Learning Warehouse. The shaded region shows the initial profile, while the outer line profile indicates ‘stretch’ on certain dimensions later in the learning project.

**2. Critical Curiosity:** Effective learners have energy and a desire to find things out. They like to get below the surface of things and try to find out what is going on. The opposite pole of critical curiosity is ‘passivity’.

- *I don’t like to accept an answer till I have worked it I like to question the things I am learning.*
- *Getting to the bottom of things is more important to me than getting a good mark.*

**3. Meaning Making:** Effective learners are on the lookout for links between what they are learning and what they already know. They like to learn about what matters to them. The contrast pole of meaning making is ‘data accumulation’.

- *I like to learn about things that really matter to me.*
- *I like it when I can make connections between new things I am learning and things I already know.*
- *I like learning new things when I can see how they make sense for me in my life.*

**4. Dependence and Fragility:** Dependent and fragile learners more easily go to pieces when they get stuck or make mistakes. They are risk averse. Their ability to persevere is less, and they are likely to seek and prefer less challenging situations. The opposite pole of dependence and fragility is ‘resilience’.

- *When I have trouble learning something, I tend to get upset.*
- *When I have to struggle to learn something, I think it’s probably because I’m not very bright.*
- *When I’m stuck I don’t usually know what to do about it.*

**5. Creativity:** Effective learners are able to look at things in different ways and to imagine new possibilities. They are more receptive to hunches and inklings that bubble up into their minds, and make more use of imagination, visual imagery and pictures and diagrams in their learning. The opposite pole of creativity is ‘being rule bound’.

- *I get my best ideas when I just let my mind float free.*
- *If I wait quietly, good ideas sometimes just come to me. I like to try out learning in different ways.*

**6. Learning Relationships:** Effective learners are good at managing the balance between being sociable and being private in their learning. They are not completely independent, nor are they dependent; rather they work interdependently. The opposite pole of learning relationships is ‘isolation and dependence’.

- *I like working on problems with other people.*
- *I prefer to solve problems on my own.*
- *There is at least one person in my community/social network who is an important guide for me in my learning.*

7. **Strategic Awareness:** More effective learners know more about their own learning. They are interested in becoming more knowledgeable and more aware of themselves as learners. They like trying out different approaches to learning to see what happens. They are more reflective and better at self-evaluation. The opposite pole of strategic awareness is being ‘robotic’.

- *If I get stuck with a learning task I can usually think of something to do to get round the problem.*
- *If I do get upset when I’m learning, I’m quite good at making myself feel better....*

References...

29. R. Deakin Crick, P. Broadfoot, G. Claxton, Developing an Effective Lifelong Learning Inventory: The ELLI Project, *Assessment in Education*, 11(3), 2004, pp. 248–272.
30. J. Heron and P. Reason, A Participatory Inquiry Paradigm, *Qualitative Inquiry*, 3(3), 1997, pp. 274–294.
31. R. Deakin Crick and G. Yu, The Effective Lifelong Learning Inventory (ELLI): is it valid and reliable as a measurement tool?, *Education Research*, 50(4), 2008, pp. 387–402.
32. R. Deakin Crick, D. Haigney, S. Huang, C. Goldspink and T. Coburn, Learning Power in the Work Place: the Effective Lifelong Learning Inventory (ELLI) and its reliability and validity and implications for Learning and Development, *International Journal of Human Resource Management*, 2012 ....

[C10] Results of introducing more HIPs to improve student success via *Bottleneck Course Redesign*

**a) CHEM 120B, General Chemistry—Introduction of Virtual Labs.**

There are three important take-home messages from these data:

- 1) Comparison of final class grades pre- and post-redesign of the course show a **decrease in the percentage of non-passable grades (from 22.5% to 16.8%)** and an **increase in average class GPA (from 2.31 to 2.61)**.
- 2) In directly comparing Spring 2014 (post-redesign) to Fall 2013 (pre-redesign), while the *percentage* of non-passable grades is essentially unchanged (15.1% vs. 16.8%), **average class GPA and total number of students earning passing grades increased (from 2.45 to 2.61, and from 203 to 228 students)**.
- 3) The course redesign cut in half the amount of time each student spends in the wet lab (by using to the virtual/computer lab). By doing this, our Department was able to open more seats for the course (274 vs. 234 average in previous semesters), because the major bottleneck to student enrollment (i.e., lab equipment and space) was removed. This resulted in **more students in total passing the course in Spring 2014 (228 vs. 182 average in previous semesters)**.

**b) CHEM 301, Organic Chemistry, CHEM 120A, General Chemistry, MATH 150A Calculus I—Impact of SI on Student Achievement.**

In 2013-14 CSUF offered 15 sections of SI linked to chemistry and 43 sections math courses with some 1000 students participating. The summary of results was this:

- SI students achieved one-half to one full grade point higher when compared to non-SI students
- Passing rates for SI students were approx. 25 percentage points higher than those for non-SI students
- There were pronounced positive effects for transfer students.

- There was evidence of limited effects due to self-selection; that is, there was strong evidence of "value added" based on SI participation.

### c) BIOL 101, Elements of Biology.

We have thus far analyzed only the class grade data, not the attitudes or concept inventories. The class GPA increased consistently in Bio 101 sections taught by the same instructor in Fall 2013 versus Spring 2014 (when the course redesigns were implemented) only for two instructors who implemented (a) SI and (b) PrepU in combination with frequent activities and vocabulary quizzes. These two instructors were the most inexperienced instructors; thus, the higher class GPA in spring may in part be attributable to experience.

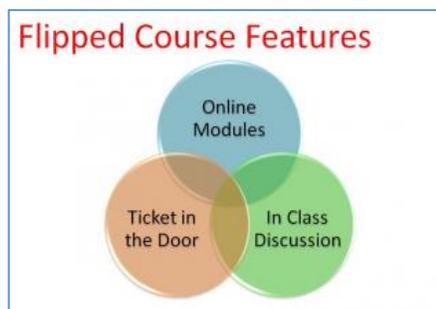
Supplemental Instruction definitely had a positive impact on the students who participated. **There was a significant difference in final course grades between those students who did not attend any SI sessions (64%, N=63) and those who attended SI sessions (79%, N=39).** One individual, who received a 37.5% on exam 1, subsequently started attending SI and earned 78%, 75%, and 76% on the next three exams, thus passing the course with an above-average score.

There were mixed results for implementation of the flipped classroom model. The one instructor who used the flipped model did so in two sections in Spring 2014, when she also taught one section in the traditional mode. **One of the flipped class sections had a higher GPA**, but the other did not differ from that of the traditional section. Comments from the student evaluations for this instructor indicate that, overall, **students were more engaged with the flipped class model.** For example, "Having flipped classroom made students interact with other students better and the activities were helpful." Students in the traditional section more often found the class "boring" or "unengaging," and some requested "more in-class, group activities."

### d) MATH 115, College Algebra—Flipping College Algebra to Engage All Students.

#### Impact on Student Achievement

During spring 2014 Semester, CSUF offered 18 sections of Math 115 College Algebra; 3 of which used the flipped mathematics model. Preliminary findings suggest that the **passing rates for students in the flipped model were statistically higher than students in the traditional class** ( $t = 3.701$ ,  $df = 650$ ,  $p < .001$ ). That is, the overall course average for the flipped model was 71.89% whereas the traditional was 64.83%. Grades were based on common departmental exams and rubrics. The reader must note, these findings are preliminary, an extension of the study will occur during the 2014-2015 academic year.



### e) ACCT 201B, Introduction to Managing Accounting.

The student repeat rate for the Department of Accounting's Introduction to Managerial Accounting (ACCT201B) course had been 43% for a number of years. The repeat rate had created a bottleneck and was disrupting the normal progression toward a degree for undergraduate business majors. As a core course in the business school's curriculum, with 'gatekeeper' status, students could not declare an area of concentration or take many upper division classes until they earned a 'C' or better.

In May 2011, Randy Hoffman was tasked with the course redesign. The target implementation date was just four months away. Mr. Hoffman’s approach was to harness the power of the digital age by drawing upon the technologies already available in the classroom and those routinely offered by most textbook publishers. His innovative approach proved that effective course redesign can be done quickly with essentially off-the-shelf components, and for little or no cost with dramatic results:

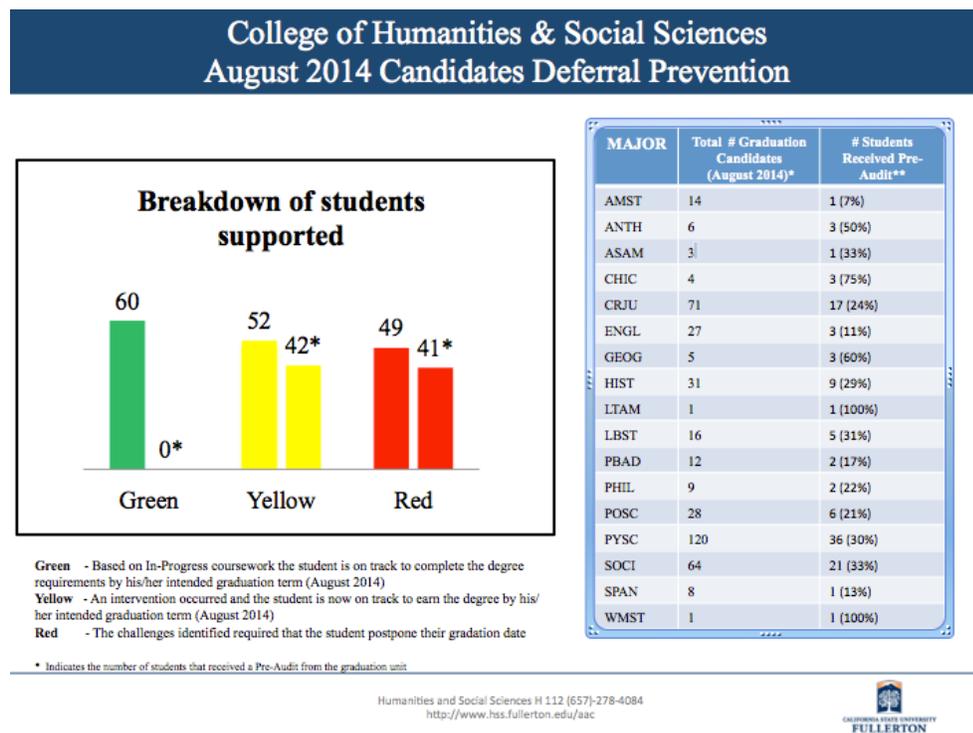
	Average Course GPA	Repeat Rate	Avg. Final Exam Score <sup>(1)</sup>
Before	1.91	43%	27.7
After (5 semesters)	2.11	22%	34.2
% Improvement	GPA is within guidelines	51%	23.4%

<sup>(1)</sup> Questions answered correctly out of 50. Final Exam is 30% of course grade.

Almost 500 students per semester are enrolled in one of Mr. Hoffman’s ACCT 201B classes. Given the above results, the course redesign has dramatically impacted student lives by making it possible for almost 200 additional students each year to stay on their degree track while improving the overall understanding of the course concepts for the 600 who would have stayed on track. The best indicator that the dramatic drop in repeatable grades is not the result of inflation is the score on the Department of Accounting’s common final exam. The course coordinator, a tenured professor, prepared the exam, consisting of 50 multiple-choice questions. The classroom instructors do not see the exam until the day of the Final. Given the final exam is 30% of the course grade the 23% increase in exam scores has been a major factor.

In May 2013, the CSU initiated a system wide effort to reduce bottlenecks in the curriculum. The first step in the initiative was “to identify proven practices for successfully redesigned courses.” The Department’s ACCT 201B course was identified as such a course by the CSU – one of only two accounting courses to receive such designation.

[C11] HSS Graduation Specialist Graduation deferral prevention data.



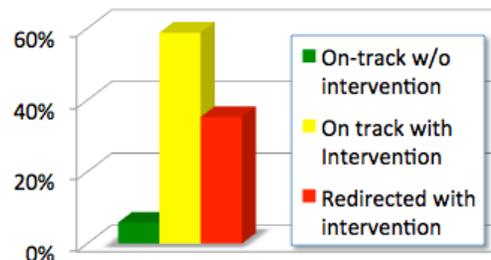
[C12] *Use of predictive analytics in HHD.*

College of Health & Human Development Graduation Deferral Prevention Project.

**Advancing Time towards Degree:** In an effort to prevent graduation deferrals and increase graduation rates among students who began at CSUF in Fall 2009 (first-time freshmen and transfer students), the Graduation Specialist for the College of Health and Human Development identified and assisted those who received a Pre-Audit Notice. This is an alert that Admissions and Records emails to students who are missing one or more requirements to graduate in their intended term. In some cases, a student truly is missing a graduation requirement, and must apply to change their graduation date. In other cases, the student has completed or is completing all remaining requirements, but an administrative piece is missing. This might be a TDA Exception that needs to be filed for major, minor, or general education requirements, a class completed at Community College that is not transferred, etc. Through research and outreach to students, major advisors, and the TDA department, both kinds of deferrals were prevented within this cohort.

**Methodology:** Using Dashboard, the Graduation Specialist created an excel spreadsheet of May 2014 graduation candidates who began at CSUF in Fall of 2009, either as first time freshmen or as transfer students. Panagon (the University’s internal imaging system) was then searched, using student ID numbers, for evidence of Pre-Audit Notices. This created a master list of students to assist.

For each, the Graduation Specialist pulled the Titan Degree Audit, student transcripts, and other imaged support documents to determine the specifics of each graduation deficiency. The list was color-coded, Green, Red, or Yellow. Green signified that the student was currently in progress with all needed requirements and did not require further intervention. Red signified that the challenge(s) identified would require the student to postpone graduation to a later term, unless new data came forward. Yellow identified that an intervention could occur that would allow the student to earn their degree in May 2014. For each yellow and red case, the Graduation Specialist worked with the major department, the TDA unit, and /or the student (via phone, email, or appointment), to initiate interventions.



**Student Objectives:** As part of the role, the Graduation Specialist aims to educate each student on her remaining requirements, and provide appropriate assistance. After contact, each student should be able to clearly interpret the TDA and articulate their remaining Graduation Requirements, make informed decisions about their course choices based on CSUF requirements, thoroughly review the TDA for mistakes and take action to rectify inaccuracies, review their plan for graduation, avoid a Graduation Deferral by initiating the postponement of graduation or successfully completing requirements, calculate minimum number of units remaining for graduation, calculate grades that must be earned if his/her major, concentration, CSUF, and/or cumulative GPA is below a 2.0, and work collaboratively with their support team to solve challenges related to graduating.

**Results:** Of the 245 Health and Human Development Candidates who began at CSUF in Fall 2009, 17 received Pre-Audit Notices (14.7%) 15 of these joined the campus as first-time freshman. 2 were transfer students. After review, 1 did not require additional assistance and was

coded Green. She later changed her graduation date to August (to complete graduate pre-requisites) and graduated.

The remaining 16 required varying levels of ongoing support and intervention. 6 students were coded ‘Red’ (must change graduation term). Of these, 5 successfully extended their graduation term (1 graduated this August) and 1 declared a second major of pre-business, removing himself from the graduation cycle. 10 students were designated ‘Yellow’ (on track with intervention). After receiving coordinated assistance and tracking from the Graduation Specialist and Major advisors, these 10 successfully graduated in Spring. In 16 of the 16 cases, the students were guided to concrete action plans, felt supported, and did not earn deferrals.

[C13] a) Earl, W. R. (1988). Intrusive advising of freshmen in academic difficulty. *NACADA Journal*, 8, 27-33.

b) Varney, J. (2007). Intrusive advising. *Academic Advising Today*, 30(3), 11, 33.

[C14] SB 1440: Associate of Arts-Transfer (AA-T) Degrees. A rising percentage of transfer students are coming to Cal State Fullerton with AA-T degrees.

**Enrollment**

Semester	Students	% of UGT
Fall 2012	18	0.4%
Fall 2013	309	6.5%
Fall2014	879	22.1%

**Fall 2013 cohort metrics**

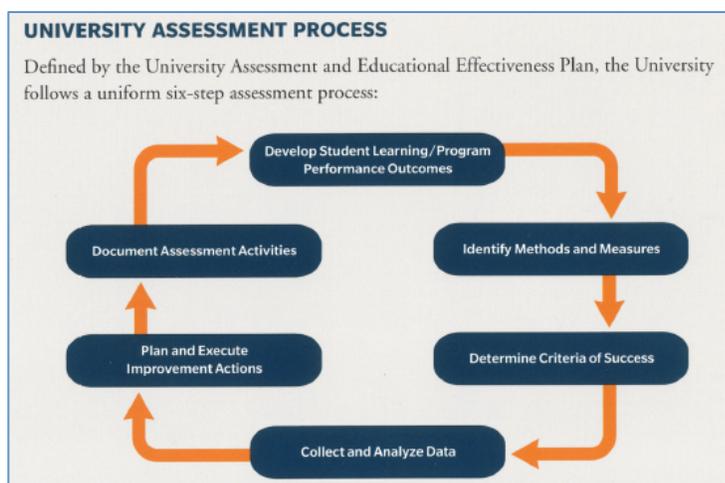
Group	Entering GPA	1 yr retention	Units earned	1 <sup>st</sup> yr GPA
SB 1440	3.12	90.6%	26.1	2.95
Other UGT	3.16	85.2%	25.3	2.99

[C15] CSUF Assessment & Educational Effectiveness website, for access go to

<http://www.fullerton.edu/assessment/assessmentmanagementsystem/>

**ASSESSMENT OF STUDENT LEARNING**

Assessment is the systematic collection, review, and use of qualitative and quantitative data to improve student learning and development. A collaborative effort, assessment documents student



achievement, facilitates continuous improvement of student learning, and demonstrates accountability to both the University and its external partners. Procedures and implementation of assessment at Cal State Fullerton are governed by University Policy Statement 300.022.

Student learning outcomes of individual departments and programs are aligned with University Student Learning Goals, as defined in University Policy Statement 300.003.

As a result of engaging with the curriculum and co-curricular activities, Cal State Fullerton graduates will:

- Demonstrate intellectual literacy through the acquisition of knowledge and development of competence in disciplinary perspectives and interdisciplinary points of view.
- Think critically, using analytical, qualitative and quantitative reasoning, to apply previously-learned concepts to new situations, complex challenges and everyday problems.
- Communicate clearly, effectively, and persuasively, both orally and in writing.
- Work effectively as a team member or leader to achieve a broad variety of goals.
- Evaluate the significance of how differing perspectives and trends affect their communities.
- Recognize their roles in an interdependent global community.

Some examples of the Assessment Showcase data:

**a) Student Public Relations Portfolio Assessment**

Learning Outcomes:

- Demonstrate skills and knowledge for entry into professional practice
- Demonstrate effective use of communication tools and technologies appropriate to the entry level of professional practice

Methods:

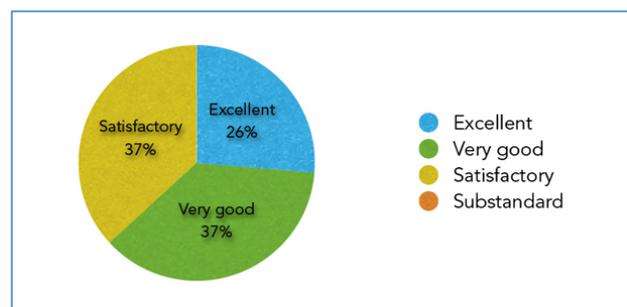
- Students enrolled in Public Relations Management (COMM 464), Spring 2012
- Professional reviewer (faculty & professionals) evaluated student portfolio (writing or creative work) involving the ability to describe a complex situation and apply a theory or model to solve it

Results:

- A random sample of 19 (out of 31) portfolios were evaluated using a 4-point rubric. 63% of the portfolios were rated as “Excellent” or “Very good”.
- Professional reviewers expressed the following concerns about the portfolios:
  - Strong emphasis on organization, but sometimes at the expense of content
  - Executive summaries “verbose and redundant”
  - Failure to follow instructions
  - Presenting facts with no research support
  - Writing, proofing, and referencing format errors

Improvement actions:

- Assessment results have been reviewed by PR concentration faculty members



- Assessment results, together with results of a recent survey of local PR practitioners by two faculty members, will be used to inform future PR curriculum decisions
- PR faculty are waiting to see the extent to which a curriculum change in the Communications core might aid student learning in COMM 464, as determined in future assessments of this course

**b) Use of Sample Items to Measure Student Ability to Apply Computing Knowledge and Mathematics**

**Student Learning Outcomes:**

Students will have the ability to apply knowledge of computing and mathematics appropriate to their discipline. Performance indicators for this SLO are based on 2 factors: demonstrating knowledge of the material and the ability to apply it.

1. Students are considered to have satisfactory *knowledge* if they can show:
  - a) an understanding of computing principles, methods, and techniques related to the discipline
  - b) an understanding of the related mathematics to the problem
2. Students are considered to be able to have met the *application* by:
  - a) apply principles, methods, and techniques related to the field to solve a problem
  - b) apply or use the required mathematical approaches to solving the problem

This learning outcome is considered met if the weighted mean ratings of sample items indicate at least 80% of students receive a rating of “C.”

**Methods:**

Using sample items designed to reflect SLO criteria, data was collected by the instructor in Spring 2012 from 67 students enrolled in the course CPSC 335 Problem Solving Strategies, and in Fall 2011 from 31 students enrolled in the course CPSC 481 Artificial Intelligence.

**Sample questions by criterion:**

• **Knowledge**

- 1a: Understand Big O notation: Indicate True or False:  $3n \log n + 7 \in \theta(n^2)$
- 1b: Find Big O of sums: Rewrite  $(\sum_{i=0}^{n-1} 2^i) + 3$  in closed form and prove efficiency class.

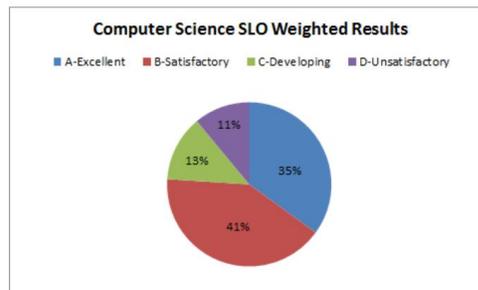
• **Application**

- 2a: Solve recurrence relation:  $(n) = 4(n/2) + 3n^2, T(1) = 1$
- 2b: Find Efficiency class of following code: What is the efficiency of this algorithm in the worst case?

```

Alg (A[0...n-1]):
do:
    flag = False
    for i from 1 to n-1:
        if A[i-1] > A[i]:
            swap(A[i-1], A[i])
            flag = True
    while flag:
        return A
    
```

2a & b: Compute the information gain for each attribute and determine the attribute that must be used for the root node of the decision tree for the following weather



Using the weighted mean of all samples collected for this learning outcome, it was revealed that 89% of Computer Science students enrolled in CPSC 335 and CPSC 481 received a rating of “C” or higher on sample items. These results indicate the criteria for satisfying this SLO were met.

data set that consists of two attributes, “outlook” and “temperature”, and a class “picnic” that makes a binary decision.

Picnic	Outlook	Temperature
Yes	Sunny	Cool
Yes	Overcast	Hot
No	Rainy	Mild
Yes	Overcast	Cool
Yes	Sunny	Hot
Yes	Sunny	Mild

**Results:**

Responses were rated on a 4-point scale (A. Excellent, B. Satisfactory, C. Developing, D. Unsatisfactory,). With more than one set of data collected for this outcome, the weighted average was calculated and results are shown in the graph below.

**Improvement Actions:**

Since the assessment process is tied to specific courses in the Department of Computer Science, it was recommended that an exit survey or examination be developed to provide a more objective assessment of student learning.

**c) Effective Use of Rubric to Assess Critical Thinking in Educational Leadership Students  
Student Learning Outcome:**

Think critically, using analytical, qualitative, and quantitative reasoning, to apply previously learned concepts to new situations, complex challenges, and everyday problems.

**Methods:**

Student progress toward the learning outcome was assessed using a scoring rubric for related items on the qualifying exam (administered at the end of the first year of coursework). For this SLO, attention was paid to the following outcomes as scored on the rubric:

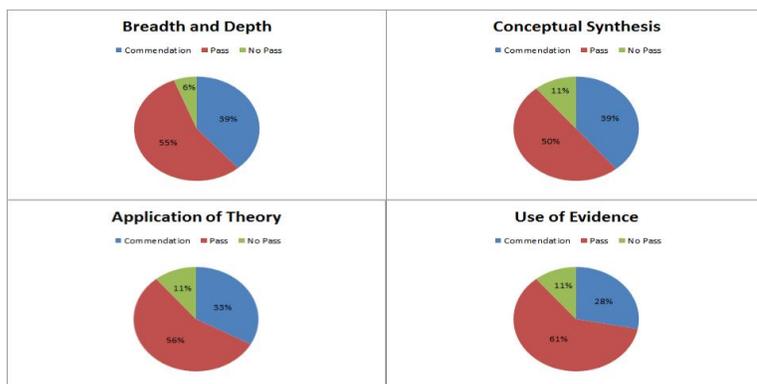
1. Breadth and depth of knowledge
2. Conceptual synthesis
3. Application of theory to practice
3. Use of evidence

Qualifying exams were scored using a three-point rubric (pass with commendation, pass, no pass) addressing 10 outcomes. Students were required to receive a “pass” on all 10 outcomes to consider this SLO met. Students who do not pass on a first attempt were allowed a second attempt.

Exams were administered and scored by the qualifying exam committee, which consists of 4-6 program faculty. The committee uses a double-blind scoring process.

**Results:**

9 of the 14 students who completed the exam passed on the first attempt. Of the 5 students who did not pass on the first attempt, two passed on the second attempt, two



These graphs report the score breakdown by related SLOs for the first attempt on the first-year Educational Leadership qualifying exam

took leaves of absence to further prepare for the exam, and one failed on the second attempt. The two students who took a leave of absence to further prepare for a re-take were both African women. No patterns were found to exist in success rate by gender or ethnicity.

**Improvement Actions:**

Final scores were compiled and analyzed by the program director and then reported to the Department, the Steering Committee, and the Executive Board for feedback and recommendations. Scores were slightly lower than in past years, which may reflect changes in a textbook and instructor for one of the core classes. Supplemental feedback from students suggested that this text did not provide sufficient depth in organization theory. The textbooks for that class are being adjusted for the coming year to provide greater exposure to primary source material.

Also, the fact that two African women did not pass and took leaves to further prepare for the exam may reflect language-related concerns in the classroom, especially as related to mastery of breadth and depth of content, an area in which both struggled. A faculty member is meeting with these students to review core content in preparation for the exam.

**d) Enhancing Student Success in Biology 171 through Supplemental Instruction**

**Performance Outcome (for the Biology Department):**

To improve student academic performance and success rate in Biology 171 (Evolution and Biodiversity), a historically challenging course.

**Methods:**

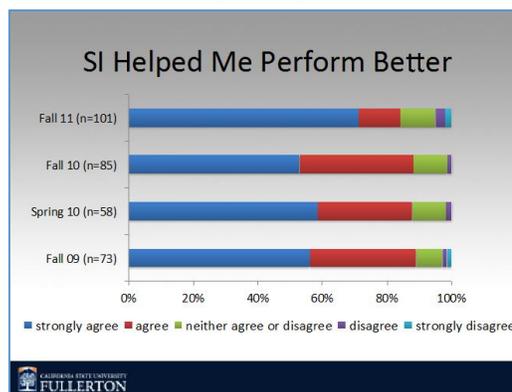
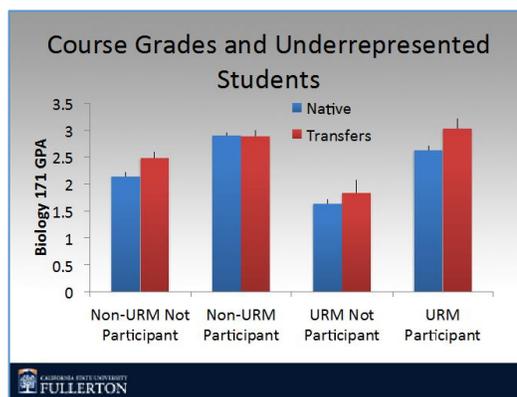
Supplemental Instruction (SI) was developed and offered to students in Biology 171. Student course GPAs were documented and compared to examine the impact of SI. Student perception of the effectiveness of SI was captured using a home-grown survey.

**Results:**

Results show that SI participants performed significantly better than non-participants. More excitingly, the positive impact of SI seems to be particularly pronounced for underrepresented minority (URM) students. In addition, most students (~90%) expressed the view that SI helped them perform better in the course.

**Improvement Actions:**

The results suggest that SI should be sustained and expanded to help students in other challenging courses. The university has established a dedicated team that manages SI and offers SI to a greater number of students in multiple disciplines.



[C16] CSUF Assessment Report.

<http://www.fullerton.edu/assessment/studentlearningassessment/> and click on University Assessment Report: 2012-2014.

**[D1] Faculty Professional Development for REACH.**

The professional development (PD) is for all faculty teaching the new HIP courses to be developed and offered as described in the Innovations narrative for Item 5.

This PD project is the outcome of a series of workshops that were part of the Keck/PKAL Scientific Framework for Strategic Change in STEM Education project. Through that project, the team developed a vision of professional development that would seek to broaden the use of active learning strategies in the university. That process included three phases: an initial preparation phase, to include data gathering and consensus building; a pilot phase, including initial professional development activities; and a growth phase that would include expansion and institutionalization of the professional development project.

This PD project will collect additional data on faculty instructional practices in the preparation phase. The PD activities in the pilot phase will contribute to our efforts to improve persistence and retention of students in HIP programs, courses, and activities by modifying faculty teaching modes.

The goals of the project are as follows:

*Preparation Phase* (initial data gathering nearly complete):

- Gather data on the initial level of interest and knowledge among REACH faculty concerning scientific teaching and discipline-based education research.
- Gather data on teaching practices and attitudes among REACH faculty.
- Summarize survey and interview data to understand the prior knowledge of faculty, their motivations, and the perceived barriers to adopting scientific teaching.

*Pilot Phase* (primary funding objective for this proposal):

- Recruit faculty to participate in on- and off-campus workshops by disciplinary specialists to promote scientific teaching.
- Convene small groups of disciplinary faculty who will meet for discussions of mutual support and problem-solving regarding scientific teaching practices
- Create and support partnerships between faculty and DBER scholars, student researchers and assistants to identify appropriate instructional strategies, perform experiments in scientific teaching.

The activities will be guided and carried out by a team of faculty affiliated with the CSUF *Catalyst* Center and Faculty Development Center. Data collection began in fall 2013 and will continue periodically through spring 2017. With the first set of pre-assessment data collected, the postdoc will be responsible for conducting validity and reliability statistics and summarizing faculty responses.

**[D2] Students and University benefits from General Education Pathways.**

Benefits for students joining a GEPSP pathway include, but are not limited to:

- A smoother, more seamless transition for freshmen to University life through another level of campus involvement in a pathways community
- An intentional thematic approach to completing general education core competency courses in the first year
- Enhancement of learning marketable and transferrable skills through intentional grouping of General Education courses

*“Scientific teaching involves active-learning strategies to engage students in the process of science and teaching methods that have been systematically tested and shown to reach diverse students.” Handelsman (2004)*

- An advance introduction to the CSUF pathways program for admitted high school students prior to fall enrollment ensuring they begin their four year journey on track
- Interaction, before the first day of class, with faculty who will be teaching the courses
- Engaging with academic advisors to plan efficient and realistic first year roadmaps that are a vital component for their four year degree
- Connecting with other students involved in the same pathway
- Demonstrating proficiency in navigating and interpreting their official Titan Degree Audit (TDA), and demonstrate competency in CSUF's Student Advising Learning Objectives
- Preparing an optimal first semester course schedule based on their TDA and pathways course options
- A sense of “belonging” through their pathways “community”
- A “step up” for what are traditionally the youngest students on the campus by communicating their values of a liberal education with their peers, faculty and staff and applying those values to their academic goals
- Understanding the vital role of scheduled advising will play in their academic success and timely progress to degree

Benefits for the University in providing the GEPSP include:

- Increased retention of first-year students
- Decreased probation in the first year cohorts
- Efficient, timely progression to four year degree completion
- Increased overall graduation rates
- Enriched interdisciplinary curriculum and co-curriculum experiences for students, faculty and staff
- Enhanced alumni relations

### **[D3]** ASCEND STEM *Evaluation Plan.*

The study plan will track the quality and intensity of project activities, monitor short-term and formative results, validate project components, and gauge quality and intensity of each activity. Evaluators will monitor program activities and outcomes through project documentation, participation and attendance logs, and pre/post students and faculty/staff surveys. Data from these sources will be used to determine: how program components are implemented, the nature and intensity of student participation, quality of program activities, and the extent of participant satisfaction.

The overall impact of the program will be determined by monitoring progress toward the program goals: 1) improving first-time, full-time STEM students' learning power, 2) > 90% of first-time freshmen earning 24 degree applicable credits, 3) > 90% of first-time, full-time STEM freshman STEM majors persisting into their second year, and 4) improving faculty and staff access to student-success data. While each project component is aimed at a discrete subset of students, together they are designed to improve college- and university-wide goals. The evaluation team will compare first-year credit accumulation and second-year STEM-major retention data for prior and current cohorts of STEM first-time freshman in order to determine and report goal progress. To monitor progress toward student learning power, all incoming, first-time STEM freshman in 2015 (and future cohorts) will complete the ELLI administration instrument prior to the fall semester, mid-semester, and end of semester. Student data will be obtained from the predictive analytics team (i.e., CSUF's Office of Institutional Research and

Analytical Studies and related departments). The evaluation team will work with the predictive analytics teams to collect and analyze this data, and to track student participation in program activities, thereby establishing systems and processes that can continue after the grant period. The evaluation team will implement a pre (beginning of year) and post (end of year) faculty/staff survey to monitor their access to and use of student-success data.

The contribution of each individual program component to the project's overall outcomes, as well as interim outcomes, will be measured through the outcome studies below. Data analysis for each study will consist of descriptive, inferential, and correlational (e.g., logistic regression with baseline covariates, fixed-effects, and multivariate analysis of covariance), depending on the study, data characteristics, and statistical adjustments for baseline equivalence.

*SUMMER RESEARCH EXPERIENCE.* The evaluation team will measure the effect of the experience on leading indicators of project goals, including degree of interest in STEM careers and majors, connection with campus culture, understanding degree requirements and course expectations. Data will be gathered using pre-post surveys designed by the evaluators in consultation with program staff, administered prior to participation, at the end of the summer experience, and at the beginning of the second semester.

*FIRST YEAR EXPERIENCE.* The evaluation team will compare student outcomes of learning power, credit accumulation, and STEM-major retention between participating students and those not participating in the First Year Experience programs. To support the analysis, the evaluation team will identify a comparable nonparticipant group(s) using propensity score matching based on data available from the predictive analytics team, as well as performance on the existing tests (i.e., ELLI, Chemistry Proficiency Exam and Math Qualifying Exam). The analysis also will explore effects related to differences in course structure (e.g., integrated READ 101, paired READ 101, no READ 101) or college.

*FACULTY PROFESSIONAL DEVELOPMENT.* The evaluation team will analyze the impact of professional development activities through pre-post faculty surveys regarding instructional practices, skills and expectations that are the focus of faculty development, as well as faculty response to and satisfaction with the development experiences. Surveys will be developed in consultation with CSUF faculty and administrators.

*STEM-ORIENTED GE THEMATIC PATHWAY.* The evaluation team will use models from the predictive analytics team that predict student outcomes based on demographics and pre-college achievement data to examine predicted versus actual student outcomes of STEM majors enrolled in the STEM GE Pathway compared to STEM majors not enrolled in the GE pathway.

*INTRUSIVE ADVISING.* Using the models derived to recommend students for intrusive advising, ARS will examine student outcomes for students identified for intrusive advising who received it versus students identified for intrusive advising who did not receive it.

Results for each discrete study will be reported directly to the PIs, PC, and leadership collaborative as they are completed, with interim results provided where possible and appropriate. Additionally, the evaluators will prepare annual reports of overall progress and results suitable for university-wide distribution. Finally, the evaluators will work with the leadership collaborative and the predictive analytics members in particular to incorporate sustainable data collection, analysis and reporting processes.

**[D4] Assessment and Educational Effectiveness Plan.****Guiding Policies**

- The procedures and implementation of the assessment of student learning outcomes at California State University, Fullerton are governed by UPS 300.022.
- The university's student learning goals are detailed in UPS 300.003.
- The university's GE goals for student learning are detailed in UPS 411.201.
- The university's mission is outlined at: <http://www.fullerton.edu/about-csuf.aspx>.

**I. Infrastructure****Academic units**

- Establish appropriate capacity for assessment and educational effectiveness; and
- Develop and execute a multi-year assessment and educational effectiveness plan that takes into account the university's mission, the university's student learning goals, as well as the specific requirements of their respective discipline and, as applicable, accreditation agency/agencies and/or program performance review guidelines.

**Colleges/deans**

- Develop in consultation with college academic units appropriate policy infrastructure and accountability processes to achieve unit, college, and university student learning outcomes;
- Monitor and ensure compliance with requirements of accreditation agencies and/or program performance review guidelines.
- Develop and execute a multi-year assessment and educational effectiveness plan.

**The Assessment and Educational Effectiveness Committee**

Collaborates with the Office of the Provost/Vice President of Academic Affairs, the Office of the Vice President of Student Affairs, and appropriate Academic Senate Committees to:

- formulate, review, and recommend university policies for assessment of undergraduate and graduate student learning;
- review and evaluate the implementation of university-wide curricular and co-curricular assessment plans and make recommendations based on university policy;
- review and evaluate program needs in the area of assessment of student learning periodically and report these needs, along with any resource recommendations, to the Academic Senate and appropriate administrators; and
- promote avenues through which best practices on assessment may be shared. (UPS 100.001)

**The Office of Academic Programs and the Office of Assessment and Educational Effectiveness**

- Provide leadership for institutional, disciplinary-based assessment, and assessment of student learning;
- Monitor and ensure compliance with assessment-related requirements of institutional and disciplinary accreditation;
- Facilitate the development and implementation of assessment plans (including General Education and online instruction) at program, center, department, college, and university levels, and ensure the alignment of learning outcomes across all levels;

- Establish and oversee the assessment and quality assurance infrastructure and procedures (including an annual assessment calendar); and
- Develop and administer professional development opportunities, and provide guidance to faculty and staff on issues related to academic assessment, regional and professional accreditation processes, and best practices and tools.

*Assessment is the systematic collection, review, and use of qualitative and quantitative data to improve student learning and development. A collaborative effort, assessment documents student achievement, facilitates continuous improvement of student learning, and demonstrates accountability to both the University and its external partners. Procedures and implementation of assessment at Cal State Fullerton are governed by University Policy Statement 300.022.*

## II. Process

An assessment and educational effectiveness plan consists of a six-step process:

- Develop student learning outcomes that align with the university's mission, the university's student learning goals, and (if applicable) the accreditation requirements of the respective discipline;
- Develop and implement methods of assessment involving direct and indirect measures;
- Determine criteria for success;
- Collect and analyze data;
- Plan (and execute) improvement actions; and
- Document assessment and improvement activities.



## III. Culture

To establish a culture of assessment and educational effectiveness that builds a community of thoughtful scholar-practitioners, academic units, colleges/deans, the Assessment and Educational Effectiveness Committee (AEEC), the Office of Academic Programs, and the Office of Assessment and Educational Effectiveness will collaborate to

- Encourage and facilitate the dissemination of assessment findings within the university;
- Promote transparency of assessment and decision-making processes to internal and external stakeholders;
- Provide recognition and professional development to faculty and staff involved in assessment and educational effectiveness;
- Work toward integrating assessment into the retention-tenure-and-promotion process in a meaningful and sustainable way;
- Work toward a quality assurance mechanism that permits the institution to periodically assess its assessment infrastructure and process.

Source: AEEC, approved unanimously, 2014-04-30

[E1] a) *Washington Monthly*, “2014 Best Bang for Your Buck” ranking, based on 2013 data, [http://www.washingtonmonthly.com/college\\_guide/rankings-2014/best-bang-for-buck-all-schools-rank.php](http://www.washingtonmonthly.com/college_guide/rankings-2014/best-bang-for-buck-all-schools-rank.php)

b) *National Center for Educational Statistics* shows the tuition and fees for a CSUF semester to be \$6,186 based on 2013-14 data. <http://nces.ed.gov/collegenavigator/?s=CA&zc=92834&zd=25&of=3&l=93&ct=1&ic=1&id=110565#expenses>

c) *VSA College Portrait* shows the tuition and fees for a CSUF semester to be \$6885 based on 2013-14 data; 39% borrowed an average of \$14,963 based on 2012-13 data. <http://www.collegeportraits.org/CA/CSUF/costs>

[E2] a) *CSU Mentor* shows the average debt for CSUF students to be \$14,626. [https://secure.csumentor.edu/campustour/undergraduate/8/csu\\_fullerton/csu\\_fullerton4.html](https://secure.csumentor.edu/campustour/undergraduate/8/csu_fullerton/csu_fullerton4.html)

b) *VSA College Portrait* shows that 39% borrowed an average of \$14,963 based on 2012-13 data. <http://www.collegeportraits.org/CA/CSUF/costs>

c) Institute for College Access & Success shows the national average indebtedness to be \$28,400.

<http://projectonstudentdebt.org/files/pub/classof2013.pdf>

[E3] *U.S. News & World Report* (September 2013) ranks CSUF among "Top Public Universities," (No. 7 among Top Public Universities-Master's institutions in the West)

[E4] CSU per Full-time Equivalent Student Allocations

<http://www.scribd.com/doc/183798652/Fiscal-State-of-the-University-Spring-2013>

Enrollment Ranking		Campus	General Fund Allocation	2013/14 Resident FTES	General Fund Allocation per Resident FTES	FY 2013/14 Ranking	Per FTE Diff to Fullerton	Dollar Impact
23	Maritime Academy		\$23,184,576	1,106	\$20,963	1		
22	Channel Islands		\$48,496,910	3,367	\$14,404	2		
21	Monterey Bay		\$52,092,783	4,617	\$11,283	3		
18	Humboldt		\$60,415,210	7,151	\$8,448	4		
19	Bakersfield		\$51,343,309	7,056	\$7,277	5		
20	Stanislaus		\$49,835,547	6,877	\$7,247	6		
17	San Marcos		\$55,597,552	7,741	\$7,182	7		
16	Sonoma		\$49,467,083	7,540	\$6,561	8		
15	Dominguez Hills		\$61,880,052	9,628	\$6,427	9		
10	Los Angeles		\$103,544,039	16,546	\$6,258	10		
8	Fresno		\$108,604,732	17,778	\$6,109	11		
12	Chico		\$85,954,532	14,363	\$5,984	12		
9	Pomona		\$103,516,842	17,356	\$5,964	13		
11	San Luis Obispo		\$95,997,068	16,192	\$5,929	14		
14	East Bay		\$67,147,261	11,436	\$5,872	15		
13	San Bernardino		\$78,595,208	14,016	\$5,608	16		
4	Northridge		\$141,659,296	25,573	\$5,539	17	(757)	(20,596,474)
3	San Diego		\$143,411,096	26,225	\$5,468	18	(686)	(18,667,574)
6	Sacramento		\$116,988,137	21,885	\$5,346	19	(563)	(15,324,871)
7	San Jose		\$111,094,782	21,298	\$5,216	20	(434)	(11,806,044)
5	San Francisco		\$120,275,359	23,074	\$5,213	21	(430)	(11,707,729)
1	Long Beach		\$141,554,836	27,198	\$5,205	22	(422)	(11,490,475)
<b>1</b>	<b>Fullerton</b>		<b>\$130,064,361</b>	<b>27,198</b>	<b>\$4,782</b>	<b>23</b>		
Campus Total			\$2,000,720,571	335,221	5,968			

**[E5]** a) CSU 2010 study "Working for California: The Impact of the California State University" referenced on <http://news.fullerton.edu/formedia.aspx> scroll down to Economic Impact.

b) Find full report at <http://www.calstate.edu/impact/docs/CSUImpactsReport.pdf>

**[F1]** *CSUF Approach to Student Success—six central elements as reported in the interim report to WASC, 2014.*

These six central elements to the university’s approach to student success and the overarching issues they address are described below:

**A clear problem statement.** How do we expand access, improve learning, increase degree completion rates, reduce time to degree, narrow achievement gaps, better serve our community, push the frontiers of knowledge, and keep college costs affordable?

**A clear vision.** Cal State Fullerton aims to become a model public comprehensive university nationally recognized for exceptional programs that prepare our diverse student body for academic and professional success.

**An institutional mission.** Learning is preeminent at Cal State Fullerton. We aspire to combine the best qualities of teaching and research universities where actively engaged students, faculty, and staff work in close collaboration to expand knowledge.

Our affordable undergraduate and graduate programs provide students the best of current practice, theory, and research, and integrate professional studies with preparation in the arts and sciences. Through experiences in and out of the classroom, students develop the habit of intellectual inquiry, prepare for challenging professions, strengthen relationships to their communities, and contribute productively to society.

We are a comprehensive, regional university with a global outlook, located in Orange County, a technologically rich and culturally vibrant area of metropolitan Los Angeles. Our expertise and diversity serve as a distinctive resource and catalyst for partnerships with public and private organizations. We strive to be a center of activity essential to the intellectual, cultural, and economic development of our region.

**A robust Strategic Plan: Four goals, 14 strategies**

Goal 1: Develop and maintain a curricular and co-curricular environment that prepares students for participation in a global society and is responsive to workforce needs. Strategies: Implement a sustainable university-wide assessment process that includes curricular and co-curricular components. Ensure that at least 75 percent of CSUF students participate in an advising system that integrates academic, career, and personal development components. Increase by 25 percent the number of CSUF students participating in international, service learning, internship, community engagement, or other innovative instructional experiences that prepare students for professional endeavors in a global society.

Goal 2: Improve student persistence, increase graduation rates university-wide, and narrow the achievement gap for underrepresented students. Strategies: Increase the overall 6-year graduation rate, such that the Fall 2012 cohort of first-time full-time freshman is at least 10 percentage points higher than that of the Fall 2006 cohort. Increase the 4-year transfer graduation rate, such that the Fall 2014 cohort is at least 10 percentage points higher than that of the Fall 2008 cohort. Reduce by at least half the current 12 percent achievement gap between underrepresented and non-underrepresented students. Increase participation in High-Impact Practices (HIPs) and ensure that 75 percent of CSUF students participate in at least two HIPs by graduation.

Goal 3: Recruit and retain a high-quality and diverse faculty and staff. Strategies: Assess the campus climate and utilize results to identify and implement retention and engagement strategies. Implement effective and systematic faculty and staff recruitment and retention programs. Align CSUF faculty demographics with national pools of appropriately qualified applicants. Provide additional training programs and increase opportunities for professional development available to post-tenure faculty and staff to promote career advancement.

Goal 4: Increase revenue through fundraising, entrepreneurial activities, grants, and contracts. Strategies: Increase overall philanthropic giving to at least \$15 million yearly in order to be in the top third of our CSU Peer Group. Increase by 25 percent overall grant and contracts revenue generated through Principal Investigator applications. Implement support mechanisms and incentive programs to increase entrepreneurial activities at CSUF, such that revenues generated by those activities increase by

50 percent over the life of the plan. Increase communications and stakeholder engagement by 50 percent over the 2011-2012 baseline.

**An Intentional Operational Plan**

Actions across the campus are designed to be coherent, collegial, and developed through inclusive shared governance strategies. There are 11 task forces, six of which are directly associated with student success and overseen by the office of Academic Affairs: Assessment, Advising, Stewards of Place, Bottleneck courses, Gap-Closing, and High Impact Practices (HIPS). The remaining five are managed out of the five other divisions at the university.

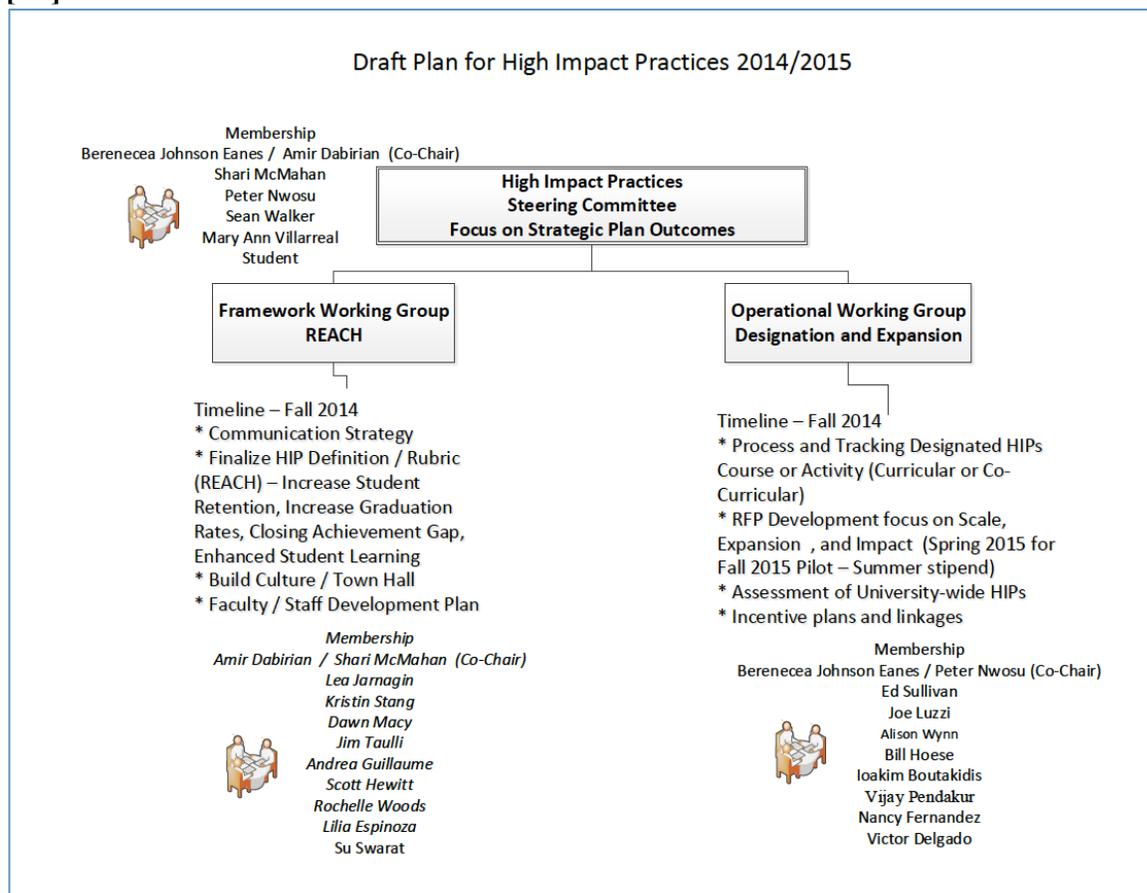
**Implementation Maxims**

The changes at the university are guided by the following dynamics. The changes are:

- Less about best practices, more about better practitioners and quality of execution.
- Less about going fast or slow, more about keeping the rhythm but upping the tempo.
- Less about bold reforms, more about transformational change through incremental reforms.
- Less about dollars, more about time, talent, and energy.

Considered together, the approach to student success at Cal State Fullerton sketches a big-picture view of the institution’s priorities over the next five years. These priorities are intertwined with the four issues raised by the WASC Accrediting Commission for Senior Colleges and Universities. Subsequently, these priorities have guided and informed how the university has deployed its programmatic, faculty, staff, and fiscal resources within the last two years to expand access and opportunities for student success, and helped move the campus towards attaining its vision of a model comprehensive public university.

**[F2] REACH teams.**



[F3] CSUF Thematic General Education Pathways.

[http://www.fullerton.edu/aac/GE\\_Degree\\_Requirements/GEPathways.asp](http://www.fullerton.edu/aac/GE_Degree_Requirements/GEPathways.asp)

[F4] Center for Internships and Community Service awards.

[http://www.fullerton.edu/cice/awards\\_CICE.html#faculty\\_awards](http://www.fullerton.edu/cice/awards_CICE.html#faculty_awards)

[F5] Educational Partnerships.

**Community Colleges:**

Citrus Community College

- (STEM)<sup>2</sup> Partnership, <http://stem2.fullerton.edu/>

Cypress Community College,

- (STEM)<sup>2</sup> Partnership, <http://stem2.fullerton.edu/>

Fullerton Community College,

- ENGAGE in STEM Partnership, <http://ed.fullerton.edu/c-real/spotlight/engage-in-stem/>

Golden West Community College,

- Upper-division General Education Pathways Partnership

Mt. San Antonio Community College,

- TEST:UP Partnership, <http://testup.fullerton.edu/>

Rancho Santiago Community College,

- (STEM)<sup>2</sup> Partnership, <http://stem2.fullerton.edu/>
- Teacher Pathway Partnership, <http://calstate.fullerton.edu/inside/2011fall/Teacher-Pathway-Partnership.asp>

Saddleback Community College,

- HHMI Weekend and Summer Scholars Partnership, <http://hhmi.fullerton.edu/>
- ENGAGE in STEM Partnership, <http://ed.fullerton.edu/c-real/spotlight/engage-in-stem/>

Santa Ana Community College.

- TEST:UP Partnership, <http://testup.fullerton.edu/>
- ENGAGE in STEM Partnership, <http://ed.fullerton.edu/c-real/spotlight/engage-in-stem/>

**High School Districts:**

Anaheim Fullerton Joint Union High School District

- Anaheim Collaborative for Higher Education, <http://www.fullerton.edu/partnerships/partnerships.asp>
- GEAR UP, <http://www.fullerton.edu/gearup/>
- Talent Search, <http://www.fullerton.edu/sa/assessment/pdfs/2014/transition/2013-2014%20Talent%20Search.pdf>
- Dual-Language STEM Program, Transforming Academic and Cultural Identidad through Bilingual Literacy (TACIB), <http://tacib.weebly.com/>
- Mathematics Teacher to Master Teacher Fellows Program, Project MT2, <http://mt2math.weebly.com/>
- Middle School STEM Program, Strategies: Science, Technology and Engineering Mini-Business Incubator (STEM, Inc.), <http://news.fullerton.edu/2014su/STEM-Inc.asp>

Fullerton Joint Union High School District

- Fullerton Collaborative
- Early College Program, <http://gb.csba.org/images/programimages14/winners.pdf>
- The Argumentation and Communication Leadership Academy, <http://gb.csba.org/images/programimages14/winners.pdf>
- Center for Creativity & Critical Thinking, Project CREATE!, <http://cccts.fullerton.edu/team.html>

Santa Ana Unified School District.

- Santa Ana Partnership, <http://www.fullerton.edu/partnerships/partnerships.asp>
- ¡Adelante!, <http://www.fullerton.edu/partnerships/partnerships.asp>
- Project MISS, <http://www.fullerton.edu/miss/>
- Upward Bound, <http://www.fullerton.edu/sa/assessment/pdfs/2014/transition/2013-2014%20Upward%20Bound.pdf>

**[F6] Advisory Boards: examples.**

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Retired

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University of Texas—Pan Am  
Department of Communication  
Advertising & Graphic Design

[F7] a) Koch, R.A., (2014). Outcomes-based funding in higher education. *Academic Senate Forum*, 24(2), 1-4.

**b) Leveraging Outcomes-based Funding (OBF) at Cal State Fullerton: A Way Forward**

*(Based on the concept published in: Elrod, S and Kezar, A. The Keck/PKAL Scientific Framework for Strategic Change in STEM Education: A Leadership Guide for Promoting Institutional Change. In review for publication.)*

**The Strategic Context.** California’s FY2014-15 higher education budget unequivocally affirms the state’s intention to adopt an outcomes-based funding model for higher ed. The state is moving in this direction because “[enrollment-based funding] does not encourage institutions to focus on critical outcomes—affordability, timely completion rates, and quality programs—nor does it encourage institutions to better integrate their efforts to increase productivity given the state’s investment...” Furthermore, the budget states that future funding is contingent on “the UC Regents and the CSU Board of Trustees adopting three-year sustainability plans that set targets for key measures, within resource assumptions provided by the Department of Finance,” and on the expectation that institutions will “...implement reforms to improve student success and to realize institutional efficiencies.”

**The Opportunity.** California’s move to OBF is less of a problem than it is an opportunity for the CSU in general and CSUF in particular. CSU: First, the access, success, workforce readiness and affordability goals that OBF policies and financial incentives support have been front and center in CSU’s mission for decades. Second, CSU lives this mission: annually, 100,000 CSU graduates are prepared for and enter the workforce with earned bachelor’s degrees in in-demand disciplines. Third, the CSU has a strong track record of improving student outcomes, even under very challenging budgetary conditions. Cal State Fullerton: The state of California’s steady move to OBF, and the corresponding financial incentives provided by the CSU, have coincided with CSUF’s commitment to student success and program quality via its five-year strategic plan. CSUF is one of the largest, most diverse comprehensive universities in the United States. The university serves over 38,000 students (ca. 50% freshman and 50% transfers), awards more than 10,000 degrees every year (more than half are first among their family to earn a degree), and ranks first in California and sixth in the nation awarding bachelor’s degrees to Hispanics. And, under existing enrollment-based funding model, CSUF ranks at the bottom among the 23 campuses in per FTE funding allocations.” The taskforce met throughout the fall 2014 semester following a proven process for developing change in higher education and outcomes will be communicated to the institutional stakeholders for discussion and comment during the spring 2015 semester

**The Challenge.** California’s journey to OBF is not yet complete. Important questions remain as to how the state, system and institutional policymakers will navigate and act within the OBF design space, especially when it comes to linking outcome metrics with funding levels. But regardless of how these questions are answered, the introduction of OBF at the state and system level creates opportunities to modify long-standing practices that no longer support synergy between our internal values and the expectations of external stakeholders. The challenge is in how we design a phased approach to weaken the dependence of our internal funding model on FTEs and strengthen its correlation to improved outcomes.

**First Consideration: Vision and Values**

- What is the vision and what are the values that should guide the changes to the academic budget allocation model to embrace our institutional values and incentive actions that will yield the desired outcome of improving student success?

**Second Consideration: Landscape and Capacity Analysis**

- What is the context in which this change must occur?
- How can we define the current state of our ‘educational value’?
- What are the data currently available that can inform our thinking and the development of our model?

**Third Consideration: Risk-Benefit Analysis**

In the context of the State’s performance and outcomes expectations and our institutional mission and strategic goals...

- What current practices or assumptions pose a benefit to the university? ...risk to the university?
- What characteristics of an OBF model would help us maximize the benefits while minimizing the risk?

**Fourth Consideration: Strategies for and theory of change**

- What interactions/interventions will help us accomplish the introduction of an OBF model that
  - optimizes our risk-benefit index, and
  - embraces our institutional values and incentivizes performances that improve student success?

**Fifth Consideration: Exemplify the Expected Outcomes**

- What are the attributes of a successful department operating under the long-range OBF model?
- What should the implementation timeline look like?

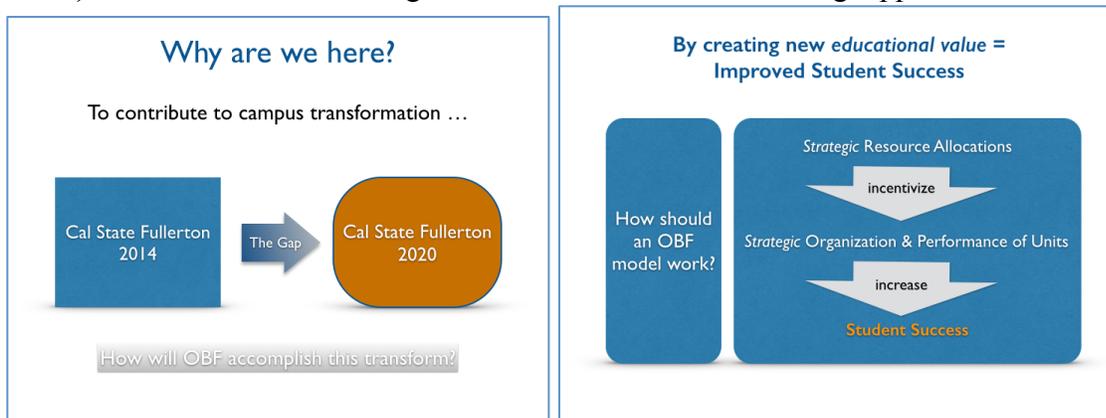
**Sixth Consideration: Stages of Implementation Plan**

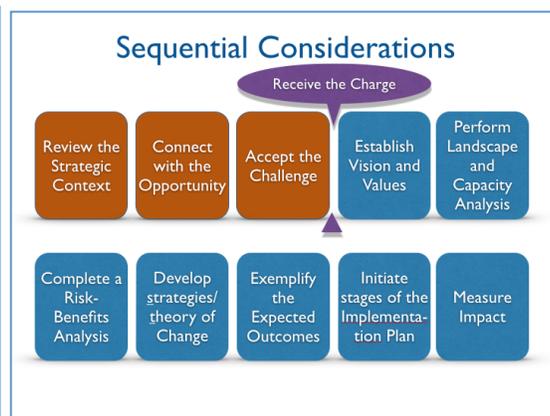
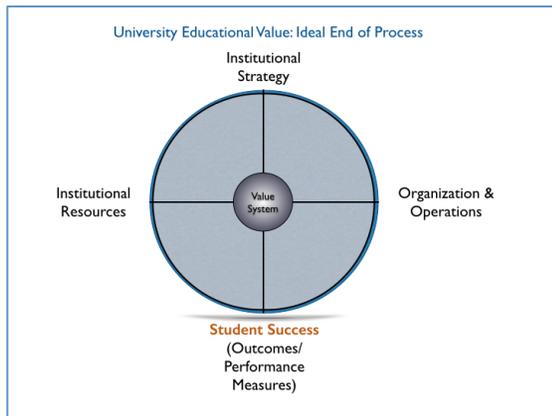
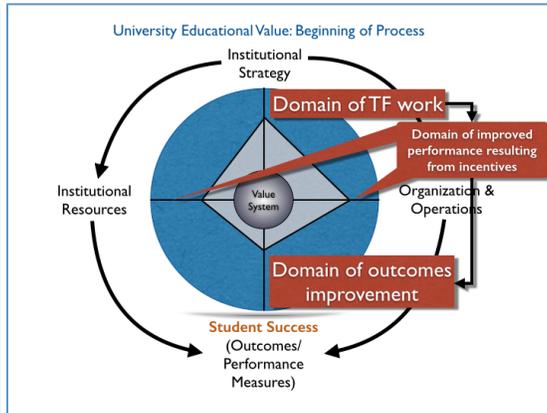
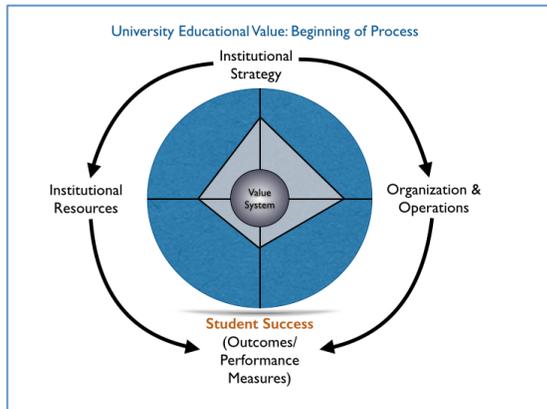
- *Engaging stakeholders...* What are the recommended steps in effective engagement and mobilization of the campus community?
- *Piloting small projects...* What criteria should be considered in identifying the initial pilot projects?
- *Fully implementing all projects across the university...* What are the most effective steps to move from pilot to full implementation?

**Seventh Consideration: Measuring Impact**

- What data collection processes need to be in place to allow appropriate evaluation of model effectiveness?

c) Outcomes-based Funding Task Force: The Model Building Approach





### To recap...

A.

**Strategic Context**

California's FY2014-15 higher education budget unequivocally affirms the state's intention to adopt an outcomes-based funding model.

B.

**Opportunity**

California's steady move to OBF and the corresponding financial incentives provided by the CSU, have coincided with CSUF's doubling down on student success and program quality via its five-year strategic plan.

### The TF Charge

- a) Develop a framework for a division-wide conversation on outcomes-based funding.
- b) Sketch out a 3-year phased approach for adopting an OBF allocation model for units within academic affairs.
- c) Help oversee implementation of the year-1 phase.

I. Establish Vision and Values:

What are the vision and values that should guide changes to the academic budget allocation model that embrace our institutional values and incentivizes actions that yield the desired outcome of improving student success?

Desired Outcome of Improving Student Success:

Student Success = Student Access + High-quality Student Learning + 4-year Degree Completion

Context Considerations:

- 16 performance indicators must be reported each year to Calif Dept of Finance;
- funds are coming from external sources proportional to performance in these categories;
- CSUF has no internal OBF process in place;
- CSUF is among the lowest funded CSU campus.

Another useful consideration:

- Cruz, J.L. (2014). Enrollments to Outcomes: California's journey to outcomes based funding.
- the local version of "The Road Ahead" questions

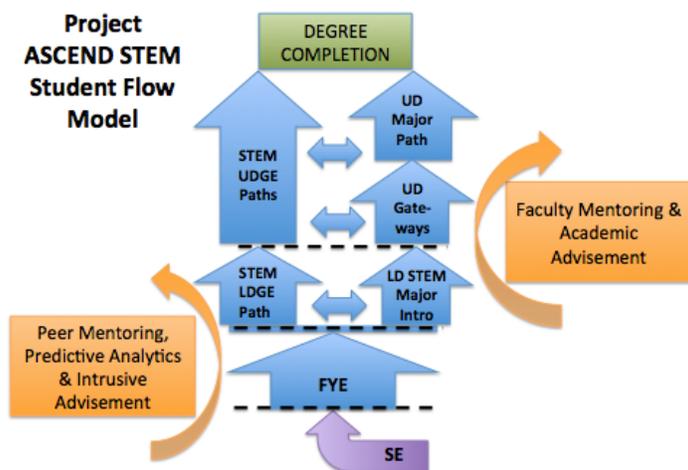
[F8] *Provost’s Strategic Investment Plan (includes AVPs’ and Deans’ allocations).*

College/Offices	AY 13-14	AY 14-15
Office of Admissions & Records	\$68,267	\$69,765
College of the Arts	\$137,358	\$65,725
Office of Research & Technology Transfer	\$600,000	\$521,246
Office of Academic Programs	\$279,655	\$876,838
College of Communications	\$150,000	\$72,655
College of Engineering & Computer Science	\$331,827	\$233,330
College of Education	\$963,150	\$908,816
College of Health & Human Development	\$962,271	\$1,205,664
College of Humanities & Social Sciences	\$273,423	\$335,226
Library	\$100,000	\$30,000
Mihaylo College of Business and Economics	\$1,618,474	\$3,180,174
College of Natural Sciences & Mathematics	\$150,000	\$716,651
Office of the Provost	\$4,100,521	\$3,404,713
<b>TOTAL</b>	<b>\$9,734,946</b>	<b>\$11,620,803</b>

*There are no entries into Appendix G.*

[H1] *Integrated Strategy for REACH, GE Pathways and ASCEND STEM.*

REACH, GE Pathways and ASCEND STEM offers a novel academic path that includes parallel routes through general education and major courses (Figure 1). It is designed to strengthen the learning power and improve the learning achievements by participating STEM students while moving them efficiently through five critical points in their paths to attaining



**Figure 1. Sample of Student Flow Model (ASCEND STEM).**

The Summer Experiences (SE, purple) deliver students to the curricular segments (blue). The Freshman Year Experiences (FYE) include courses in the major and STEM-oriented GE Pathways. HIPs will be incorporated into the FYE, STEM GE (left) and major (right) pathways. Peer Mentoring and other academic transition activities are critical to smoothing the transition shock for freshman and will be found in SE and FYE. Predictive Analytics coupled to Intrusive Advisement (left side orange) will be used as students enter the curricular segments. Faculty Mentoring and Academic Advisement (right orange) will be included in second-through-fourth year experiences. The successful student will move through Momentum Points in the paths (dashed lines) and data on student success collected at these points will be compiled as part of the Predictive Modeling and the Evaluation Plan.

baccalaureate degrees in five years (Figure 2).

For first-time freshman, especially first-generation and low-income students (Lopez, 2009), there are five critical areas in their paths to degree completion:

academic *preparation* (Adelman, 1999, 2006; Hoachlander et al., 2003; Warburton, Bugarin, & Nuñez, 2001), academic and social *acculturation* (Tinto, 1993; Wassmer, Moore, & Shulock, 2004), academic and social *engagement* (Zhao & Kuh, 2004), *planning & goal-setting* (Choy, 2001; Terenzini et al, 1996), and *timely progress toward the degree* (Adelman, 2006; Moore & Shulock, 2009). Failure to achieve or remediate any of these areas can increase attrition and withdrawal (see theoretical

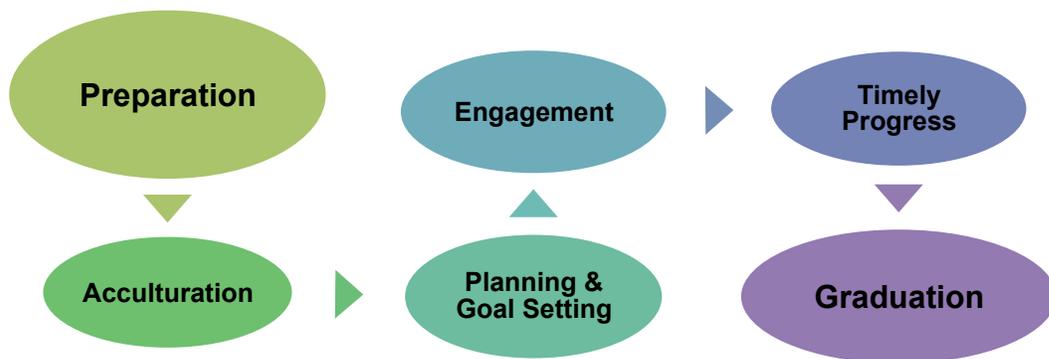
models from Lee, Mackie-Lewis, & Mark, 1993; Guiffrida, 2006; Nora et al., 2006; Tinto, 2006).

REACH, GE Pathways and ASCEND STEM focus particularly on high-impact academic engagement. Kuh et al. (2008) reported that student engagement in educationally meaningful activities is positively related to academic outcomes, such as first-year grades, and by persistence to the second year of college. This study also concluded that while exposure to effective educational practices benefited all students, the effects were even greater for less-prepared students and students of color, compared to white students. Other research, such as Tierney (2004), has noted the importance of cultural and social capital for student retention. Jensen (2011) has observed that factors influencing retention operate on the individual level (academic performance, including GPA; course load; academic self-discipline; and attitudes and satisfaction, including positive attitude about academics, commitment to college and sense of belonging and

social connectedness); the institutional level (academic engagement, including undergraduate research, university size and opportunities to join clubs) and social and external level (social and family support, including faculty and staff support, familiar and authentic cultural environment, sense of belonging and community and sense of importance).

REACH, GE Pathways and ASCEND STEM propose strategies composed of intentional and scientific interventions. The project will identify ways to strengthen the students’ learning power and adapt general education and major academic pathways to build readiness and competence as required to provide the students with the momentum to traverse critical transition points. Research-supported interventions are planned that will promote key student characteristics known to positively affect dispositional learning and overall learning power (Buckingham Shum and Deakin Crick, 2012) and that correlate with student success (Figure 2). Implementing proven practices will produce the academic momentum required for students to pass through each of the critical points with ease.

The project also offers a novel test of the hypothesis that deep academic engagement via general education thematic pathways and HIPs bolster student motivation, aid in goal setting, and contribute to building the academic momentum required to increase student persistence, accelerated student progress, and significantly improved student degree completion rates. In addition, the hypothesis that predictive modeling combined with intrusive advisement improves academic path efficiency will be tested.



**Figure 2. Educational Processes associated with Student Success.**

**Preparation:** To improve students’ preparation for success in the university, Project ASCEND STEM will offer first-time freshman entering STEM majors SUMMER EXPERIENCES that foster awareness of campus life and university academics expectations (Tinto, 2012), and that facilitate the evaluation of learning power and pre-requisite knowledge proficiency in a STEM-specific, two-day new student orientation. For some students, the SUMMER EXPERIENCES may include remediation via the Early Start

Program. Preparation activities will continue in FIRST-YEAR EXPERIENCES as courses during this period build on the foundation set during SUMMER EXPERIENCES.

**Acculturation:** To improve students' first-year success at CSUF, Project ASCEND STEM will offer SUMMER EXPERIENCES and FIRST-YEAR EXPERIENCES that include academic and social supports, peer mentoring and participation in learning communities to, among other academic goals, build awareness of campus culture, which is known to help all students improve success at the university (Moon, et al., 2013)—especially important here is the finding that at-risk students are more likely to close the student success gap after such experiences (Stephens et al., 2014). Low-income, first-generation students transitioning from high school to higher education experience profound doubts and fears about their identity and capacity as college students (Yeager and Dweck, 2012).

**Planning & Goal setting:** The setting of academic expectations is critical to enhancing persistence (Tinto, 2012). Students will begin the process of goal setting in their SUMMER EXPERIENCES and will continue to do this as part of their academic advisement and faculty mentoring activities. To provide feedback and mentoring as the students move through their first year, REACH, GE Pathways and ASCEND STEM will offer a combined early warning and advising/mentoring system made up of PREDICTIVE MODELING and INTRUSIVE ADVISEMENT. This will augment the heavy-touch advising and mentoring that will be part of the GENERAL EDUCATION THEMATIC PATHWAYS and academic degree programs—together these activities will support timely progress to degree.

**Engagement:** To improve students' engagement with academic pursuits and their exposure to learning communities, including collaborative projects (Zhao and Kuh, 2004), undergraduate research (Kuh, 2008; Moon et al., 2013) and service/community-based learning (Zhao and Kuh, 2004). REACH, GE Pathways and ASCEND STEM will offer several of these opportunities. While many campuses are implementing themed GE pathways, none have reported on their efficacy to shorten the time to graduation for underserved, underprepared and/or low-income students. REACH, GE Pathways and ASCEND STEM staff will gather evidence of the pedagogical value of innovations in promoting deep engagement as required to strengthen learning (Deakin Crick, 2012). By ensuring that participating students have multiple points of engagement with the campus community, themed GE pathways are expected to improve persistence and, ultimately, five-year graduation rates. The efficacy of course redesign in improving student persistence also is being studied.

**Timely progress:** To keep students on track for five-year completion, student performance data will be collected at key momentum points. Additionally, advisors and mentors will be in contact with students as they track their progress toward the general education and major curricular pathways. Data mining has been utilized in higher education to predict student success (Herzog, 2006; Barker et al., 2004; Delen, 2010; Yadav et al., 2012), track students' academic paths, and, of special interest for this project, evaluate first-time freshmen's one-year persistence (Sujitparapitaya, 2006).

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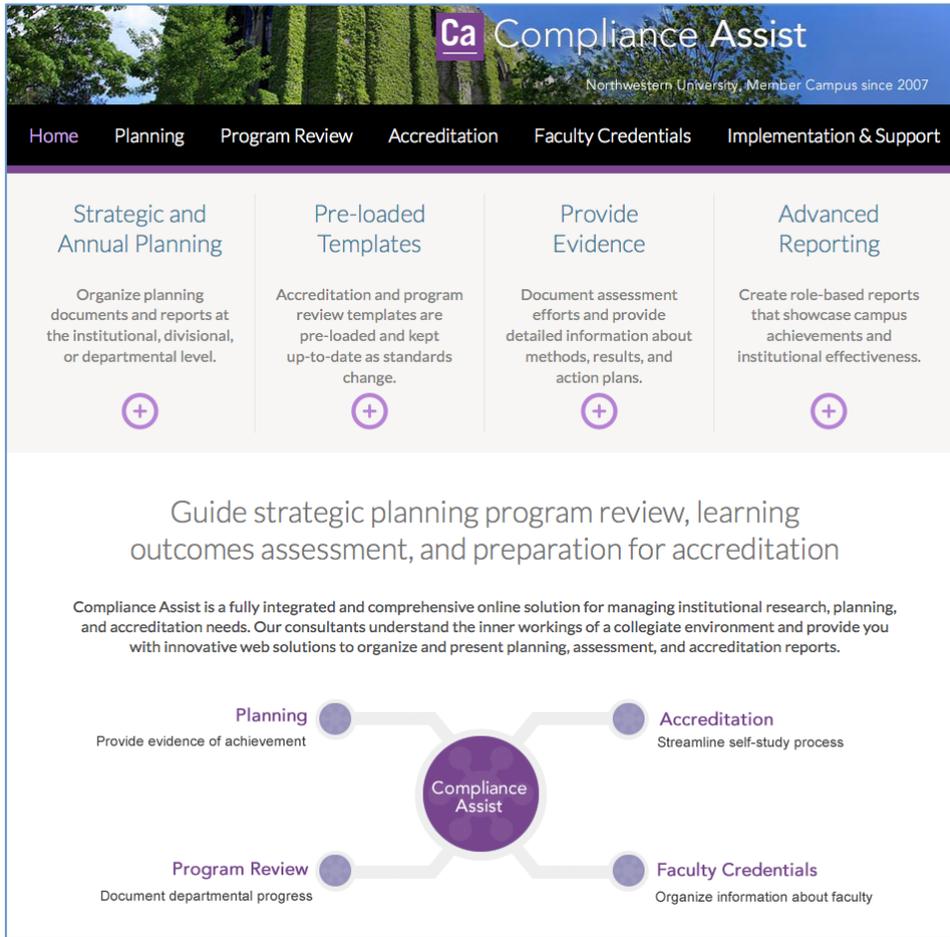
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**[H2]** a) *Service Learning at CSUF*. <http://www.fullerton.edu/cice/Service-Learning.htm>

b) Yeh, T.L. (2010). Service-Learning and Persistence of Low-Income, First-Generation College Students: An Exploratory Study. *Michigan Journal of Community Service Learning*, Spring 2010, pp.50-65.

ABSTRACT: Low-income students who are the first in their family to attend college continue to drop out at alarmingly high rates. Previous studies have shown that service-learning can have a positive influence on student retention. However, little research exists to explore how low-income, first-generation (LIFG) college students experience service-learning, and how it might impact their persistence in higher education. This article presents findings from a qualitative study of the service-learning experiences of six LIFG students, with the aim of generating an in-depth understanding of how these experiences may have contributed to the students' persistence in college. Implications for future research are discussed.

**[H3]** *Campus Labs Compliance Assist*  
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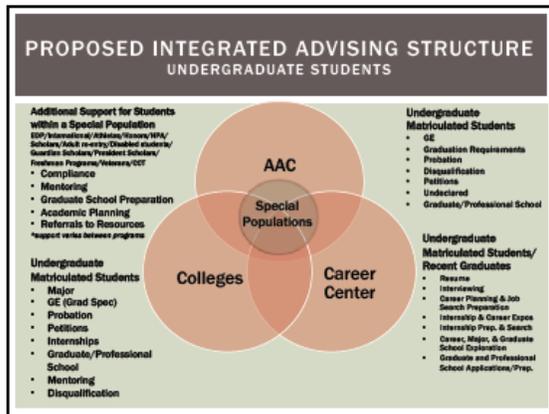
**Accreditation**  
Streamline self-study process

**Faculty Credentials**  
Organize information about faculty

**Program Review**  
Document departmental progress

**Compliance Assist**

[H4] Advisement at CSUF



**PROPOSED INTEGRATED ADVISING STRUCTURE UNDERGRADUATE STUDENTS**

**Additional Support for Students within a Special Population**  
EDP/International/Disabled/Visually/HFA/Scholarship/Adult re-entry/Disabled students/Guardian Scholars/President Scholars/Leaders Programs/Reserve/ROTC

- Compliance
- Mentoring
- Graduate School Preparation
- Academic Planning
- Referrals to Resources

\*support varies between programs

**Undergraduate Matriculated Students**

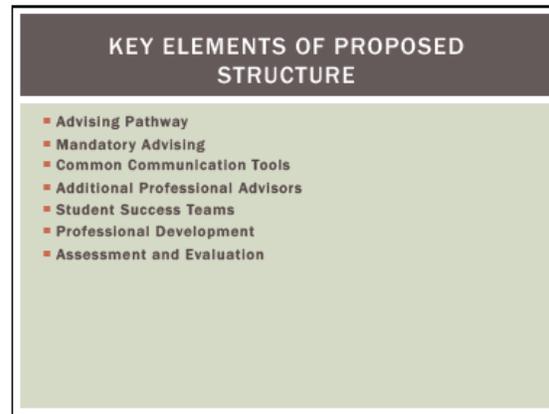
- Major
- GE (Grad Spec)
- Probation
- Petitions
- Internships
- Graduate/Professional School
- Mentoring
- Disqualification

**Undergraduate Matriculated Students**

- GE
- Graduation Requirements
- Probation
- Disqualification
- Petitions
- Undeclared
- Graduate/Professional School

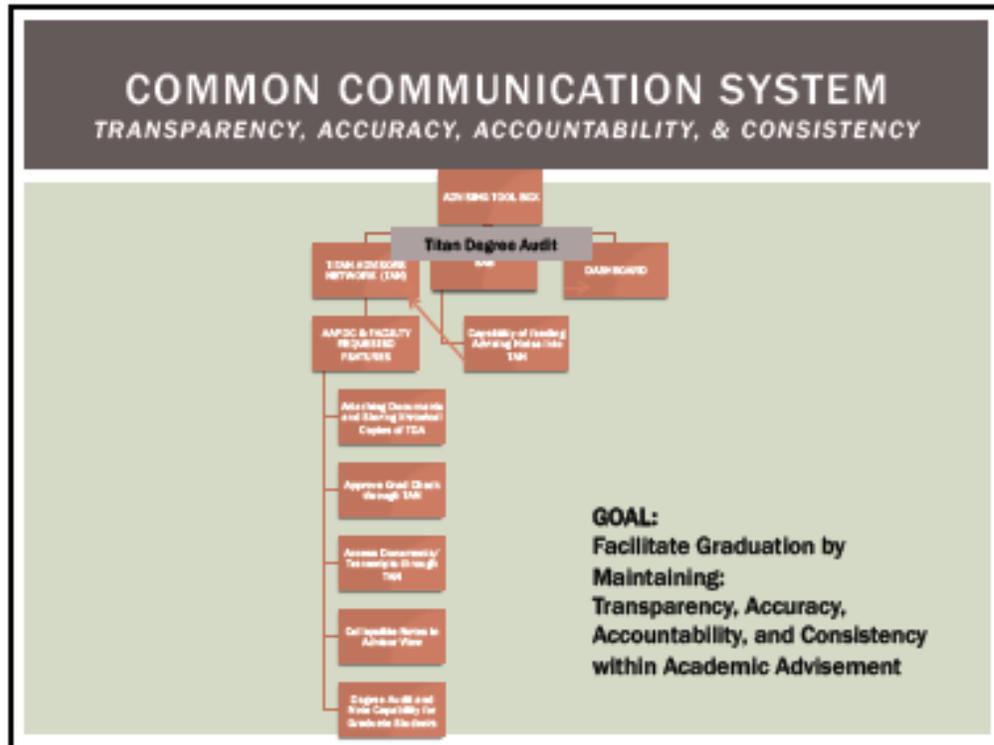
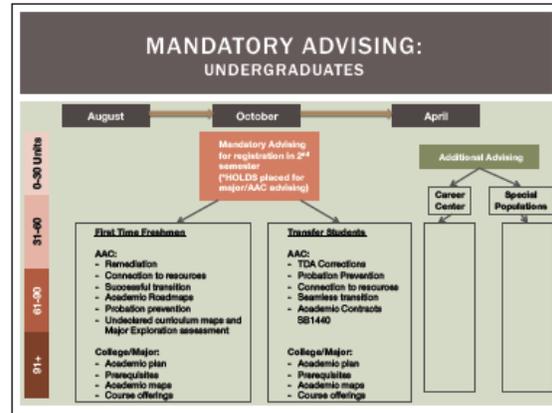
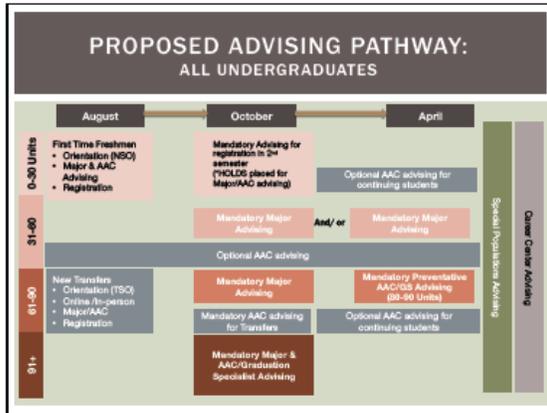
**Undergraduate Matriculated Students/Recent Graduates**

- Resume
- Interviewing
- Career Planning & Job Search Preparation
- Internship & Career Expo
- Internship Prep. & Search
- Career, Major, & Graduate School Exploration
- Graduate and Professional School Applications/Prep.



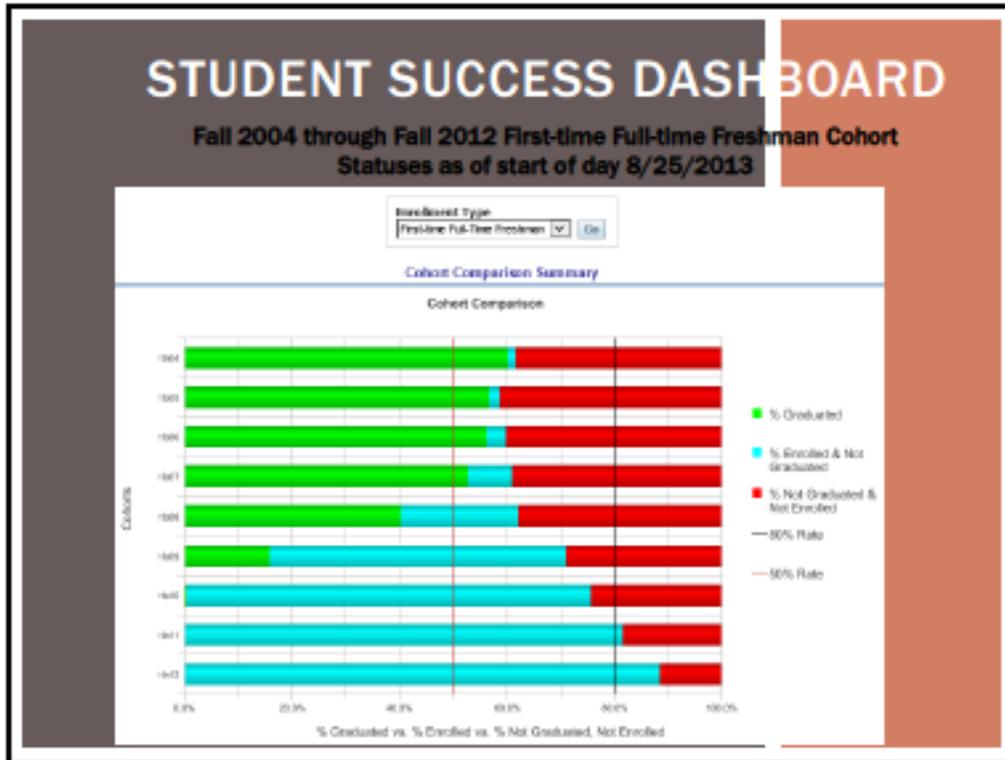
**KEY ELEMENTS OF PROPOSED STRUCTURE**

- Advising Pathway
- Mandatory Advising
- Common Communication Tools
- Additional Professional Advisors
- Student Success Teams
- Professional Development
- Assessment and Evaluation



[H5] Student Success Dashboard (SSD) by Institutional Research and Analytical Studies (IRAS)

<http://www.fullerton.edu/analyticalstudies/>



[H6] Educational Advisory Board (EAB) and Academic Programs for predictive analytics and intrusive advising

