



GROSSMONT-CUYAMACA
COMMUNITY COLLEGE DISTRICT

Educational Master Plan

External Trends Analysis

March 2012

*A blueprint for continuing success
in the years ahead*

Contents	Page
EDUCATION	4
1. An older, more diverse student body will be more self-directed and proactive.	4
2. Increasing demands for efficiency and accountability.	7
3. Increasing attention to and demands on basic skills education.	13
4. Declining taxpayer funding will restrict access, adding pressure on colleges and students.	18
5. Trends in technology and demands for accountability change priorities for funding.	24
SOCIETY	29
1. An increasing number of refugees from Iraq choose to settle in El Cajon.	29
2. Healthcare costs place an increasing demand on private and public funds.	30
TECHNOLOGY	32
1. Technology is increasing access to information around the world.	32
2. New ways to create, publish and access information make it harder to judge its validity.	33
3. Increasing demand for mobile access to learning resources.	34
4. Continued growth in and demand for online learning.	37
5. Development of new disciplines and career opportunities in technology-related fields.	39
6. Technology places new demands on all college services.	39
7. Technology offers opportunities to reduce some costs.	42

Contents	Page
ECONOMY	43
1. Structural employment may cause an increase in the level of base unemployment.	43
2. Education and technical skills critical to earning a living wage.	45
3. Students are going deeply into debt to pay for their education.	46
4. Increasing focus on green jobs.	47
ENVIRONMENT	48
1. Significant changes are needed to maintain Earth’s ability to support its human population.	48
2. Environmental sustainability is a growing focus for colleges and universities.	49
3. The availability of water is an issue of growing concern in San Diego.	50
4. Growing investment and development of the sustainable energy sector.	50
POLITICS AND LEGAL	51
1. Increased legislative intervention affects the operations of the community colleges.	51
2. Federal expectations for increased productivity and accountability for student outcomes.	52
REFERENCES	55

Education

Trend 1: An older, more diverse student body will be more self-directed and proactive in their college education.

1.1 Students are more diverse.

- a. Students are from ever more diverse backgrounds – educational as well as economic, cultural, and everything else (Herman Miller, 2011). Students no longer fit the model of affluent 18-22 year olds who graduate from high school and proceed directly to and graduate from a four-year college. They are increasingly pursuing their education in an interrupted path, changing institutions several times (Botman, 2009).
- b. The average age of students is increasing. The average age of the student body in two-year colleges is close to 30 (Herman Miller, 2011). Between 1980 and 1990, undergraduate enrollment for persons over age 25 rose 34%, while enrollment of students under age 25 increased only 3% (Flynn, 2011c).
- c. Full-time students are in the minority (Herman Miller, 2011). Hispanic students are more likely than other students to be enrolled part-time; in 2006–07, 43 percent of Hispanic undergraduates were enrolled part time (White House Initiative, 2011).
- d. Minority-Serving Institutions (MSIs), Hispanic-Serving Institutions (HSIs), and Historically Black Colleges and Universities (HBCUs) together enroll nearly 60 percent of the Nation’s 4.7 million minority undergraduate students and serve a higher proportion of low- and middle-income students than their peer institutions. More than half of America’s Latino undergraduates attend an HSI (a college or university with a student body that is at least 25 percent Latino). Latino college enrollment is projected to increase faster than other groups—39 percent by 2017, compared to 5 percent for white students and 26 percent for African-American students (White House Initiative, 2011).

- e. Latino enrollments in colleges and universities increased between 1980 and 2000, though a smaller proportion of Hispanics complete college compared to Caucasians and African-Americans (White House Initiative, 2011)
- f. Rosen (2011) calls the generation of people who were born in the 1990's and beyond the "iGeneration." These students intuitively use technology and navigate the Internet with ease. They are constantly connected and always "on," have fast response times (often preferring speed to accuracy), are highly social and prefer to work in teams. They prefer engagement, experiential learning, and to learn by doing (Herman Miller, 2011).
- g. Students exist in an interactive, high-tech, short attention-span world where traditional teaching methods fail to engage them. They do not relate to lecture mode (Herman Miller, 2011). Instead, faculty must utilize the 24/7 technology environment of the iGeneration to get students more involved in learning and free up classroom time to help them make meaning of information (Rosen, 2011). The challenge for education is to leverage technology to create relevant learning experiences that mirror students daily lives and the reality of their futures (National Educational Technology Plan, 2010).
- h. Globalization is influencing where our students are from and where they are going to get their degree. With more access to information via the Internet, the movement of students and scholars across national borders will increase (Herman Miller, 2011). At the University of the Arts in London, a focus group of 15 high-achieving international students from diverse backgrounds who had to overcome particular difficulties to succeed indicated that support and individual determination were key factors in their success (Finnigan, 2008).
- i. Few college campuses across the U.S. have safety and inclusion policies, causing many students, faculty and staff to conceal their sexual or gender identity to avoid intimidation and harassment (UniversityBusiness.com, 2010).

- 1.2 In an increasingly competitive education sector, students increasingly think of themselves as consumers or customers.
 - a. For-profit colleges excel at customer service and tend to treat students like customers (Noaman, 2011).
 - b. Technology is creating unparalleled competition: "if a student sees himself or herself as a customer – paying the bills and having high expectations of receiving educational value for the money – the student will go, or log on, to the institution that fulfills an immediate learning need" (HermanMiller, 2011, p. 7).
 - c. Students will need to be treated more as customers or consumers who will be involved in their own learning goals and outcomes in a self-directed way (Herman Miller, 2011). Students will take much greater control of their own learning, as proactive producers and managers of their learning solutions, materials, and portfolios (Flynn, 2011c). As students come to see themselves more as collaborators in education, educators are challenged to rethink their roles (Skiba, 2010).
- 1.3 Students attend college for a variety of reasons.
 - a. Rapid changes in technology mean that achieving success in today's global workplace requires lifelong learning, in large part at community colleges (Reese, 2011). This leads to increasing demand for individualized programs that develop practical, job-enhancing skills and certifications, and for more experiential, outside- the-classroom learning opportunities such as cooperative education, service learning, apprenticeships, and internships (Herman Miller, 2011).
 - b. Students attend the community college for a multitude of reasons. Some are what Mullin (2010) called "Retoolers," students who enroll in courses to expand their knowledge or skills; others are "Swirlers," students who attend four-year institutions and enroll at a community college for just one course, to both earn credit that transfers at a much lower cost and potentially reduce their time-to-degree. Others are high school students concurrently enrolled in college to get a head start on their postsecondary education.

- c. High school graduates who have never been to college have a number of considerations that affect their decision whether or not to pursue higher education. They are less confident about their financial prospects and much less likely to be on a solid career path than are their peers with a college degree, but most believe there are still ways to succeed at work without additional education. They are concerned about the high costs of college and whether it is a good idea to borrow money to go to college (Johnson, Rochkind & Ott, 2011). Low-income students tend to go to parents, friends, teachers and school counselors for information about college (Griffin, Hutchings & Meece, 2011).

Trend 2. Increasing demands for efficiency and accountability.

2.1 Increasing demand for more completions.

- a. President Barack Obama has established an ambitious agenda for U.S. postsecondary education: by 2020, to once again have the highest proportion of college graduates in the world. In the “American Graduation Initiative,” President Obama called upon community colleges to increase degree and certificate completions by 5 million by 2020 as a component of the larger higher education attainment goal. In response, the National Governors Association has established a campaign to mobilize governors to increase college completion rates in support of the national efforts to increase educational attainment. The College Board has adopted an objective to increase to 55 percent by 2025 the number of 25- to 34-year-olds who hold an associate’s degree or higher. The American Association of Community Colleges and the Association of Community College Trustees are developing a Voluntary Framework for Accountability to benchmark student progress and completion data against similar institutions (Community College League of California, 2010).

- b. Reclaiming the global lead in college attainment will require increasing college attainment rates among adults from 37.9 percent to 60 percent. The Lumina Foundation for Education projects that if the U.S. continues with the rate of increase seen over the last eight years, the nation will reach a higher education attainment level of only 46.6 percent by 2025, leaving a shortfall in college graduates just under 25 million (Community College League of California, 2010).
- c. California needs 1 million more baccalaureate degree holders than are projected for 2025 to meet employer needs. However, in 2006, California ranked 23rd among states in its share of 25- to 34-year olds holding at least a bachelor's degree, down from eighth position in 1960. California ranked 43rd among states in the ratio of bachelor's degrees awarded to the number of high school diplomas awarded five years earlier (Community College League of California, 2010).
- d. Two-thirds of the students who enter higher education do not complete a degree within six years. Only 36% of first-time college students entering a community college in 1995 earned a certificate, associate's degree or bachelor's degree within six years (Brock et al., 2007).
- e. In Vision 2020 (Community College League of California, 2010), 33 California community college leaders formed the "Commission on the Future" to identify policy and practice changes that, if implemented, could increase meaningful completions in community colleges by 2020. They set three goals: (1) Success: 1 million more completions in California's community colleges by 2020; (2) Equity: eliminate the achievement gap; and (3) Access: close gaps in the participation rate (number of students per 1,000 residents).
- f. As part of their response to the American Graduation Initiative, Miami Dade College is offering scholarships to encourage more students to attend college to meet Obama's college graduate goal of the United States being #1 in college graduates by 2020. Including a 3.0 GPA requirement and the ability to pass entrance exams (and thus not need any remedial classes) helps encourage students to be more prepared for college and increase numbers that go on to graduate. The scholarships are funded primarily by private donations (Khaderoo, 2011).
- g. Lateral transfer between community colleges in California is common. Taken from the perspective of an individual college, this reduces the number of credentials that it awards and exaggerates observed

differences in credential completion between some groups of students who have higher lateral transfer rates than others. For example, African-American students transfer more frequently than Hispanics (Bahr, 2009).

- h. Demands for accountability to stakeholders and self-assessment will be ever more strident. "There is a dangerous link between funding challenges...and increased calls for accountability, a quid pro quo that legislatures and governmental agencies could use to leverage unwilling colleges into cooperation. Publicly funded institutions need to be accountable to their principal stakeholder – the public" (Herman Miller, 2011, p. 10). Accountability and assessment tools will continue to become commonplace in defining institutional effectiveness (Flynn, 2011c).
- i. The K-12 system has already been subject to increased demands for accountability. The No Child Left Behind ("NCLB") law sets high penalties for failure to reach the goals it sets, including school closure, administrative firings, state or proxy takeover, and other forms of restructuring. Tying teacher evaluations to student test scores creates more teaching to the test, more time for test preparation and less for instruction, and a narrowing of the curriculum. Eight years into NCLB, college remediation needs have not abated (Ravitch, 2010).
- j. A study that surveyed 4,481 students from 21 community colleges and tracked their academic progress after their initial matriculation found that factors associated with community college degree attainment and/or transfer to 4-year institutions include academic preparation, motivation (but not academic self-confidence), family income, parent education of bachelors degree or higher, full-time enrollment, higher degree expectations, and fewer paid work hours. Older students are more likely to obtain a two-year degree and not transfer, while younger students are more likely to transfer without earning a two-year degree. This type of information can be useful for identifying students at greatest risk for not fulfilling their goals. It also can be useful for structuring community college accountability systems – since student characteristics are strong predictors of outcomes, it makes sense to compare degree/transfer rates for institutions with comparable student populations (Porchea, Allen, Robins & Phelps, 2010)

- k. Over the next decade, nearly eight in 10 new job openings in the U.S. will require some workforce training or postsecondary education. Half of the 30 fastest growing occupations in America require at least a four-year college degree. America once had one of the most educated workforces in the world, but today only about 40 percent of young adults have a college degree – ranking ninth in the world in college completion. While close to 70 percent of high school graduates in the United States enroll in college within two years, only 57 percent graduate within six years. For low-income and minority students, the completion rate is closer to 45 percent. Students from high-income families are almost eight times as likely as their low-income peers to earn a bachelors degree by age 24. Closing this college attainment gap is critical to restoring America’s standing as a global leader in higher education. President Obama has articulated this as America’s goal: to once again have the highest proportion of college graduates by the year 2020 (White House Initiative, 2011, p. 13).

2.2 Increasing demands for colleges to prepare students for jobs conflict with demands for increasing numbers of students with degrees and certificates.

- a. The community college provides education, technical training, life skills and job skills. It therefore plays an important role in state, regional and local economic development by helping to prepare a skilled workforce (Flynn, 2011c; Herman Miller, 2011; Reese, 2011).
 - b. Working professionals find community colleges to be great resources for training necessary to remain current in their industry or new skills to move in to management. Each year of credit at a community college is worth almost as much, in terms of increased earning potential, as a year at a four-year college (Reese, 2011).
 - c. Given the current economic climate and high unemployment rates, there exists a clear demand for, and focus on, quickly returning people to a changing work environment through education and training. In community colleges, this demand manifests itself in heightened interest in short-term, work-related certificates in specific programs (Mullin, 2010).
 - d. Community college leaders are faced with focusing either on (a) increasing completion rates using the traditional measures (i.e., attainment of associate and bachelor’s degrees) used in international comparisons or (b) getting people back to work with certificates and industry credentials that are not counted as a success measure in those comparisons. Focusing solely on the former narrowly defines success while overlooking the needs and achievements of a
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significant number of people, whereas focusing solely on the latter will not increase the international ranking of the United States. Community colleges are therefore in the difficult position of balancing two completion agendas: the person's need to return to work and the nation's desire to be a world leader in terms of a narrowly defined set of outcomes (Mullin, 2010).

- e. In response to the looming retirement of baby boomers (almost 25% of the 2.7 million U.S. manufacturing employees are 55 or older), the National Association of Manufacturers has led a drive to establish standardized curricula at community colleges to prepare students to qualify for certification in industrial skills ranging from welding to cutting metal and plastics. The emphasis is on community colleges because they are affordable and can quickly turn out job candidates (Hagerty, 2011a).
- f. The number of Latinos who have enrolled in technical education programs has increased during the past two years. During the 2009-10 program year, more than 2.3 million Latino students took at least one course in career and technical education, representing 19 percent of all students who participated in career and technical education nationally (White House Initiative, 2011).
- g. Globalization will influence and shape all aspects of teaching and learning (Flynn, 2011c), and education will need to collaborate with business and industry to align educational programs with the demands of the local and global economies (National Association of State Directors of Career Technical Education Consortium, 2010).

2.3 Recognition of the value of the arts and humanities in higher education.

- a. Students of the liberal arts gain more critical reasoning skills than do other majors (Nel, 2011). The study of reading, writing and critical thinking is essential to students regardless of the degree or career path they choose; holistic, integrative thinking develops primarily through the humanities, and provides career and professional advantages to those who have them (Walker, 2009). Liberal arts provide the ability to see and think in systems, inquire aggressively, act and think independently, see the bigger picture and deal effectively with complexity, ambiguity and contradictions – important skills for business managers (Williams, 2010).

- b. In a movement away from “business-only” business programs, major universities are increasingly recognizing the value of integrating liberal arts and humanities with their programs to develop more well-rounded students (Wallace, 2010b). Business programs increasingly develop new curricula focusing on how to approach and analyze problems and issues from diverse perspectives and imagine new, creative ways to solve or resolve them without bias or predisposition. Drawing on the arts and humanities, “design thinking” is the new business program buzzword for this process. Some business school leaders believe that students will make higher-level moral decisions after learning critical and creative thinking skills (Wallace, 2010a).

2.4 Increasing demands to realign funding priorities.

- a. Senate Bill 1143, signed into law in 2010, called for the California Community Colleges board to form and adopt a plan to improve student success. In light of fiscal constraints, districts must realign funding priorities to coincide with academic performance. Programs that help increase the number of community college students earning an associate degree or transferring to a four-year university should receive redirected funding (Gonzales, 2011).

2.5 Increasing demands to provide more structure to educational programs.

- a. Community colleges must more clearly define and facilitate future education paths for students. Stackable credentials, career pathways, and applied associate and bachelor’s degrees have emerged as ways to provide opportunity for continued academic progression for those who might otherwise have enrolled in terminal training programs (Mullin, 2010).
- b. A new manufacturing-skills certification endorsed by the National Association of Manufacturers is a stackable credentialing system for community college students (Gonzalez, June 2011).

- c. Community college students are more likely to persist and succeed in programs that are tightly and consciously structured, with relatively little room for individuals to deviate (on a whim or even unintentionally) from paths toward completion (Scott-Clayton, 2011). Community college students are often confused and sometimes overwhelmed by the complexity of navigating their community college experience. The large number of program options students must choose from can cause decision paralysis, arbitrary decision outcomes, and dissatisfaction (Scott-Clayton, 2011). Efforts to improve persistence should focus on processes, not programs. Recommended practices include (1) Create more structure by simplifying student choices and minimizing how many decision points students encounter; (2) Redesign advising and counseling so that it is streamlined and personalized (through student success courses and interactive websites, not unaffordable individual advising sessions); and (3) make non-academic supports intrusive so that students are forced to encounter them. Intrusive supports can involve making participation in advising or student success courses mandatory (Scott-Clayton, 2011).
- d. Student services expenditures influence graduation and first-year persistence rates, and matter more for schools with lower graduation and persistence rates. The marginal effect of increasing student services expenditures by \$100 on graduation rates is largest at low-current-graduation-rate schools, increasing an institution's graduation rate by more than 0.5 percentage points if it was in the lowest 20% of institutions in its initial graduation rate (Hom, 2010).

Trend 3: Increasing attention to and demands on basic skills/developmental education.

3.1 Low levels of preparation create increasing workload for the community colleges.

- a. The wide range of ability, preparedness, background, opportunity and motivation of higher education students will require more varied and holistic approaches to inclusive learning (Flynn, 2011c). Although colleges and universities seek and recruit an increasingly diverse student body, there is internal resistance to dealing with the learning issues that come with the students' diverse abilities, aptitudes, and skills (Herman Miller, 2011).

- b. This lack of preparation creates an increasing workload for community colleges. The adult population has issues with literacy, including problem-solving abilities, critical thinking, and competencies with communication and technology. These literacy issues must be addressed to maintain a competitive workforce (Herman Miller, 2011).
- c. The visibility of basic skills education in California has increased in recent years. One major catalyst was a comprehensive community college strategic planning process completed in 2004 that listed basic skills as a critical area of focus. Another was an increase in the system's minimum course-taking requirements for the associate degree. These helped pave the way for the state's Basic Skills Initiative (BSI) and greater public reporting of basic skills outcomes through the new *Basic Skills Accountability Report* (CCCCO, 2009).
- d. Higher expectations for college attainment and success raise the stakes for developmental education. In 2006, the Board of Governors (BOG) revised California's Title 5 regulations to raise the minimum, statewide course-taking requirements for the associate degree. These new rules went into effect for students who entered in fall 2009. The higher minimum requirements establish that students must complete transfer-level Freshman Composition (or an equivalent English course) and Intermediate Algebra (one level below transfer) with Elementary Algebra as a prerequisite (or an equivalent mathematics course). These higher minimum requirements were one catalyst for California's Basic Skill Initiative (BSI), which documents and promotes best practices in developmental education, in part to improve students' chances of meeting the new degree requirements (Perry, Rosin, Woodward & Bahr, 2010).
- e. This is a period of intense scrutiny of developmental education by researchers, policymakers, philanthropic organizations, and national initiatives. This scrutiny has resulted in broad agreement that changes in practice related to developmental education are needed to improve students' rates of successful course completion, and to compress the amount of the time required for developmental students to become college ready (Perry, Rosin, Woodward & Bahr, 2010).

3.2 *Academic Outcomes of Students Placed into Basic Skills Courses.*

- a. Students who place into basic skills courses complete their intended educational path at a lower rate than students placed in transfer-level courses; those basic skills students who do complete take longer than their college-ready peers. However, many incoming community college students do not understand the potential importance of assessment tests, and have no advance preparation for them (Venezia, Bracco & Nodine, 2010).
 - b. Findings of a study that followed the cohort of students who entered community college for the first time in fall 2002, and who enrolled in credit remedial courses in mathematics, writing, or reading during a seven-year period (Perry, Rosin, Woodward & Bahr, 2010) include:
 1. About half of the 122,427 first-time students in the fall 2002 cohort enrolled in a remedial course during the seven-year period. In all, 41% enrolled in a course in a remedial mathematics sequence, 32% took a course in a remedial writing sequence, and 11% took a course in a remedial reading sequence. Overall, slightly more than half of students who took a remedial course did so in more than one sequence.
 2. Compared with the full first-time cohort, a larger share of students who took a remedial course were of traditional college age (19 or younger); aspired to transfer; enrolled full time during their first year (12+ units per term), on average; and attended community college for a greater number of semesters. About a third of developmental students in writing and mathematics completed a degree or credential and/or transferred, although about two-thirds of students who enrolled in each of the remedial *mathematics* and *writing* sequences and nearly three-quarters of students who enrolled in a remedial *reading* sequence did not reach those milestones.
 3. Compared with students who began at lower levels within each remedial sequence, a larger share of the students who began at higher levels of the sequences were of traditional college age when they entered community college; aspired to more ambitious academic goals; enrolled full time during their first year (12+ units per term); completed college-level coursework beyond the sequence; and transferred or completed a degree or certificate.
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4. Hispanic and black/African American students were overrepresented among those who began at lower levels of the state's writing and mathematics sequences. Asian students were also overrepresented among those who began in lower-level remedial writing courses.
5. Overall, very few students who began at the lowest levels of remedial coursework ever completed the last course in the remedial sequence or beyond. The lower a student's starting level in a remedial mathematics or writing sequence, the less likely the student was to complete a college-level course in that subject or a course one level below. Even among students who began remedial writing only one level below college composition, 62% neither transferred nor completed a degree or credential.
6. Passing the first remedial course is related to persistence in – and successful completion of – a writing or mathematics sequence. Students who delayed a second, more advanced course by more than a semester were less likely to complete the remedial sequence or a college-level course.

3.3 Approaches to addressing basic skills success.

- a. Research draws attention to the importance of better integrating developmental instruction with a suite of support services that ensure students stay engaged, receive assistance, and maintain a sense of forward progress toward their goals. Contextualization raises questions about the relationship between developmental courses and occupational or academic content in the rest of the curriculum. And the fact that students who begin at the lowest levels of remedial sequences are unlikely to complete those sequences has prompted some educators to think differently about the structure and goals of remedial sequences, through approaches such as acceleration and modularization (Perry, Rosin, Woodward & Bahr, 2010).
- b. Students are more likely to successfully complete developmental courses offered in a compressed format than in regular-length developmental education courses, regardless of the students' age, gender, and ethnicity (Sheldon & Durdella, 2010).

c. Skills in reading, writing, and mathematics are key to academic learning but are conventionally taught separately from the discipline areas to which they must be applied. Alternative approaches to teach basic skills that may be helpful in improving the outcomes of academically underprepared college students include:

- ◇ Contextualization, an instructional approach that creates explicit connections between the teaching of reading, writing, or math and instruction in a discipline area. In contextualization, the primary instructional objective is the academic skills, and the basic skills course is generally taught by basic skills instructors.
- ◇ Integration, an instructional approach in which academic skills are integrated into the subject content, which is taught by discipline-area instructors.

Both contextualized and integrated instruction are supported by quantitative studies that include control or comparison groups. Research tends to show positive findings for basic academic skills, but not always disciplinary knowledge, for both contextualized and integrated instruction. However, the studies also indicate that considerable effort is needed to implement contextualization because instructors need to learn from each other and collaborate across disciplines, a practice that is not common in college settings (Perin, 2011).

d. Four mechanisms appear to encourage student success (Karp, 2011):

1. Creating social relationships: well-implemented learning communities, student success courses, required study groups, mandatory meetings or communication with professors.
2. Clarifying aspirations and enhancing commitment: psychological variables such as utility (perceiving college as useful for employment), satisfaction (enjoying being a student) and goal commitment have a large impact on persistence. Advising activities improve student outcomes when they help students develop a concrete set of steps for attaining their goals and help them understand how courses related to these goals. Student success courses are a promising vehicle for this.
3. Developing college know-how: how to navigate the expectations and norms of postsecondary education; student success courses can help provide this information in a timely and efficient manner.

4. Making college life feasible: help address conflicts between the demands of work, family and school with assistance such as on-site daycare, offering courses at a variety of times, providing on-campus work opportunities, and transportation assistance.
- e. The explosion of generational poverty poses a serious threat to the socioeconomic survival of the United States. A new paradigm in teaching must be instituted to address the under-resourced students who make up a significant portion of community college students. A three-part program is proposed (Kroder et al, 2009):
 1. Community colleges would adopt the "Getting Ahead" curriculum that groups under-resourced students into a learning community. Within the curriculum, students use their shared socio-economic experiences as the starting point for learning and through guided discussions and assignments develop higher and more critical levels of reasoning that prepare them for college work.
 2. Instructors need to implement teaching strategies that inculcate supportive relationships between teachers and students and stress skills that teach students how to learn.
 3. Instructors should implement service-learning activities and course plans entailing civic engagement, which amplifies the effect of learning.

Trend 4: Declining taxpayer funding will restrict access and put more financial pressure on colleges and students.

4.1 *Declining public funding shifts costs to students.*

- a. California's budget for the fiscal year beginning July 2011 is 5% lower for community colleges, which means they may have to turn away about 140,000 students. The entire system enrolls over 2.9 million students (Hagerty, 2011b).
- b. New federal funding tends to favor workforce training and science, technology, engineering and mathematics (STEM) programs in institutions that enroll large numbers of minority students. The 2010 Health Care and Education Reconciliation Act (HCERA) includes \$2 billion to help community colleges develop, improve, and expand education and career training to workers. It

also includes funding for Minority-Serving Institutions, including Hispanic Serving Institutions (those that are at least 25% Hispanic) to renew, reform and expand higher education programs, particularly in STEM areas, and more funding for Pell grants. The 2012 White

House budget requests additional support for innovation and STEM education (White House Initiative, 2011).

- c. Tuition tends to increase on average 8% per year; this inflation rate means that the cost of college doubles every nine years. According to the College Board, tuition and fees at public universities have risen almost 130% over the past 20 years, from \$2,800 in 1988 to \$6,500 in 2008 (tuition and fees only, not including books, room and board). However, when adjusted for inflation the median income actually declined by \$400 over that time period (Herman Miller, 2011).
- d. A fundamental shift now requires students to bear more of the cost of higher education, leading to families taking on unprecedented levels of debt (the average student loan bill of students graduating from four-year institutions was more than \$23,000) or choosing to pursue a two-year degree instead. According to the Department of Education, the proportion of middle-income students enrolled at a four-year college has dropped while the proportion enrolled at a two-year college has risen over the past decade (Censky, 2011a).
- e. In March 2010, President Obama signed a law that made the federal government the primary lender to students for government programs. Sallie Mae is the nation's largest student lender. It has 3 payment options for students: 1) interest payments, student make a payment while in school and get more favorable interest rates; 2) fixed payments, with a monthly payment of \$25 while a student; 3) deferred payment, under which students defer payment until graduation and are given the highest interest rates (Choi, 2011).
- f. Colleges and universities will be expected to deliver more education in less space – to increase their "learning per square foot"(Flynn, 2011c). Physical infrastructure on campuses is outdated, yet colleges are unlikely to have the money to provide better spaces (Herman

Miller, 2011). The growing popularity of technology in education has increased pressure on outmoded infrastructure not designed to support the power demands and connectivity. The role technology plays in nation's classrooms varies depending on funding (The National Educational Technology Plan, 2010).

4.2 Declining access to the community college may lead to increasing conditions for enrollment.

- a. Access to the community college will be reduced in response to the combination of reductions in course-section offerings due to state budget cuts and concurrent strong demand for college services by adults seeking retraining and other skills. The California Community College (CCC) system reports that many students – particularly first-time students – have not been able to enroll in the classes they need to progress toward their educational goals (effectively rationing access). This access problem will become even more serious to the extent that budget reductions further reduce enrollment slots (Taylor, 2011). The California Legislative Analyst's Office (LAO) offered three suggestions to address this access problem (Taylor, 2011):
 1. Adopt statewide registration priorities that reflect the Master Plan's key goals and, to the greatest extent possible, maximize access for the state's highest-priority students: (1) continuing students who are fully matriculated and are making satisfactory progress toward their educational goals; (2) new students, particularly recent high-school graduates, who have completed matriculation requirements; then (3) non-matriculated new and continuing students, students with a declared goal of personal enrichment, and students who are not making satisfactory progress toward their goals.
 2. Place a cap on the number of taxpayer-subsidized credits a student can take at a CCC at 100 units. Students seeking to transfer or earn an AA degree generally need 60 units of coursework, and those looking for technical training generally need fewer than 60 units. In 2009-10, the system provided instruction to nearly 120,000 students (headcount) who had already earned 90 or more CCC units (9,000 had earned over

150 units). The Legislature could authorize colleges to charge students with more than 100 units for the full cost of instruction. This would result in a CCC workload reduction of 38,000 full-time-equivalent students in 2011-12, for a savings to the state of as much as \$175 million.

3. Restrict the number of times that a student may repeat classes at taxpayers' expense. The LAO focuses particularly on physical education classes and suggests elimination of funding for any repeat of the same or similar activity class (i.e., those in a P.E. course series). CCs could offer the repeat of these classes as community service classes, fully supported by student fees. The LAO expects this to reduce workload by about 15,000 FTES and save about \$60 million.

4.3 *Declining access to California's public four-year institutions.*

- a. Although the number of first-year and transfer students to UC schools increased in 2011, there are concerns that funding will reduce ongoing access (Clark, 2011). UCSD changed the GPA requirement for the Transfer Acceptance Guarantee program from 3.0 to 3.5 for fall 2012 transfer students because the number of Transfer Acceptance Guarantee (TAG) program applicants has increased significantly and UCSD does not have the capacity to accommodate all of those students (Flynn, 2011b). The San Diego Community College District estimates that this will limit the number of students eligible for transfer by 45%.
- b. The California State University campuses in the San Diego region are reducing their enrollments in response to state budget cuts. CSU San Marcos expects to reduce its enrollment from 7,583 to 7,400 full-time equivalent students for 2011-2012; SDSU will go to 25,914 full-time equivalents from the current enrollment of 26,037 (Flynn, 2011a).

4.4 *Fiscal pressures create friction within colleges.*

- a. Faculty labor issues may intensify as older faculty delay retirement and pressure to hire part-time faculty increases due to economic constraints. The structures of educational institutions and the types of employment relationships between them and faculty will continue to multiply; inequities among faculty will cause tensions (Flynn, 2011c). The use of part-time faculty with low wages and no benefits will increase significantly. There also will be a gradual aging of the faculty; with the economy in recession they are less inclined to retire now, diminishing the ability to hire a "new generation of faculty who can deal with a technologically sophisticated, diverse, and growing student body "(Herman Miller, 2011, p. 9).

- b. Workplace bullying tends to increase as financial budgets decrease and funding for programs becomes scarce. Workplace bullying is defined as "behavior that consists of repetitive and offensive intentional conduct targeted at an individual or group of individuals that creates an intimidating and/or threatening environment which produces a risk of psychological and/or physical harm" (Arismendi-Pardi, Crawford & Kennedy, 2010). It differs from harassment, which is illegal discrimination that occurs because of a person's protected class status and can be imputed to the employer. Workplace bullying victims are likely to have negative outcomes (over 30% lose their jobs by layoff, termination or by quitting, and 12.3% miss work due to psychological injury. Doing nothing to the bully was the most common employer response (54%); only 1.7% of bullies lose their jobs for any reason. Workplace bullying in general and academic bullying in particular are the subjects of explicit anti-bullying laws throughout the United Kingdom, but American college administrators and faculty are likely to deny its existence. Addressing issues related to bullying in the workplace from a labor and faculty perspective does not interfere with academic freedom as it is defined by the American Federation of Teachers (Arismendi-Pardi, Crawford & Kennedy, 2010).

2. Without a qualified pool of STEM teachers who have degrees in these fields, the cycle continues of unprepared math and science students taught by underprepared teachers. STEM teachers whose background or preparation is weak simply do not promote passion and commitment in students to pursue STEM careers or to become STEM teachers. Uniting business and education as partners represents an innovative and mutually beneficial solution to meet the needs of business and the needs of education (Rice & Young, 2009).

- c. Community colleges can play an essential and growing role in the preparation and professional development of a diverse pool of future teacher candidates by: recruiting diverse students into teaching; providing math and science education for pre-teachers; offering professional development to PreK-12 teachers in the areas of math, science, ESL, and special education; providing transfer degrees to colleges and universities and partnering with 4-year institutions to offer BA/MA degrees on the community college campus; and providing early childhood programs and licensure degrees for teaching in PreK-8 schools (National Association of Community College Teacher Education Programs, no date).

- d. The state of science, technology, engineering and math education is reaching a critical stage. Ongoing federal programs emphasize the importance of increasing numbers of STEM graduates to close the growing competitiveness gap between the U.S. and emerging economies. Improving collaborations between two-year and four-year colleges in preparing STEM graduates is important in this effort; colleges must ensure that TAG agreements are in place to facilitate transfer in the STEM majors as well as programs to interest students in these majors in the first place, such as MESA and the Louis Stokes Alliance for Minority Participation (Adam, 2011).

Trend 5: Trends in technology and demands for accountability change priorities for funding of programs and disciplines.

5.1 Demand for more strongly qualified teachers, particularly in math and science.

- a. California has more than 300,000 teachers serving a student population of more than 6 million. The demand for teachers is projected to grow as 32% (97,000) of current teachers are expected to retire within the next 10 years and enrollment in university and college teacher preparation programs declines (California Department of Education, 2011).
- b. Many secondary school students are taught by underprepared and beginning math and science teachers; these students are less likely to score as proficient and above in math and science. The demand for well-prepared math teachers is expected to increase dramatically in the next decade. CSU has committed to doubling its math and science teacher production, and UC has committed to quadrupling its production of these teachers. Strategies to achieve this include increased recruitment, improved community college transfer programs, more financial incentives, greater Internet-supported instruction, and new credential pathways (California Senate Office of Research, 2009)
 - 1. In his 2012 federal budget request, President Obama challenged the country to prepare 100,000 STEM teachers over next decade (Morrissey, Hogue & Erickson, 2011).

5.2 Less focus on the value of liberal arts and humanities despite impact on learning.

- a. Students in four-year colleges are experiencing minimal increases in critical thinking, analytical reasoning and other higher level skills due to (1) a lack of academic rigor; (2) too little reading and writing, (3) and too much emphasis on social study groups and (4) extracurricular activities unrelated to learning (Jaschik, 2011).
- b. Students majoring in liberal arts fields see “significantly higher gains in critical thinking, complex reasoning, and writing skills over time than students in other fields of study.” Liberal arts (humanities) classes often assign more reading and writing, and thus they teach the ‘soft’ skills of critical thinking and reasoning better than classes taught without significant amounts of reading and writing. However, news organizations, legislatures, and the public decry poor student learning due to anti-intellectualism, legislators’ beliefs that college is a waste of the public’s money, and a cultural prejudice against the humanities (Arun & Roksa, 2011).
- c. Curriculum and instructional delivery are focusing increasingly on math, reading, and science. This is reducing the infusion of arts into the school design (Viglione, 2009).
- d. Arts education is stifled by today’s results-oriented drive for core educational achievement. The No Child Left Behind Act of 2002, for example, esteems the arts as a “core academic subject,” putting them on a par with math or language; but the act doesn’t actually require states or districts to evaluate their students’ artistic abilities in the "coin of the realm" under NCLB – standardized tests. Many people consider testing to be the litmus of whether a subject is important. However, arts education is typically one of the first subjects cut or eliminated in difficult times. About 29 percent of California’s schools lack a course of study in any of the four arts disciplines – music, visual arts, theater and dance – that is based on state standards. Research has been inconsistent in findings on the impact of arts on other learning; some conclude that schoolchildren who are exposed to dance, music, theater and the visual arts appear to better master reading, writing and math than those who simply focus on the basic

- curriculum; others concluded that arts classes do not significantly, quantifiably improve students' overall academic performance (LaFee, 2007).
- e. Business Administration programs can learn from the arts (specifically fiction writing) how to take criticism; what motivates people; how to engage an audience; and when to let go of good ideas when they do not serve your larger venture (Bell, 2008).
 - f. Art galleries can serve as service-learning venues where students address personal, aesthetic and social issues and problems (Jeffers, C. S. 2000).
 - g. U.S. K-12 students rank poorly compared to students from countries that are economic competitors on the Programme for International Student Assessment (PISA). Structural improvements (data systems & professional development) are not enough; a study of nine nations that consistently outrank the U.S. on PISA showed little agreement on standards and testing, but they all share a liberal arts curriculum that focuses on content over skills. In contrast, U.S. schools focus on building reading and math skills disconnected from content. Task forces in the U.S. Department of Education are now beginning to recommend liberal arts curricula for high school students (Munson, 2011).
 - h. Humanities shift the focus back to the intrinsic value of education through development of critical reasoning and the use of debate, argument, curiosity, inquiry, imaginative thought and critical reasoning (Walker, 2009). Complementing the critical method with the aesthetic method of teaching the humanities is a means to cultivate contemplative and creative skills (Caranfa, 2006).
 - i. Global education must extend beyond exchange student programs, which reach few students; a better goal is to make sure students learn that they are part of an interconnected world where events anywhere may influence them (Dennis, 2011).
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5.3 *Increasing demand for applied and interdisciplinary programs.*

- a. Information literacy as a credit-bearing discipline is a natural extension of our information society (Badke, 2008).
- b. The applied baccalaureate degree integrates once-terminal applied associate degrees and course work into a four-year degree. The applied baccalaureate degree is defined as a bachelor's degree designed to incorporate applied associate courses and degrees while providing students with higher-order thinking skills and advanced technical knowledge and skills. The degree can facilitate baccalaureate degree completion for adults who accumulated some credits but failed to attain a degree and for adults who had not enrolled in college. (Ruud, Bragg & Townsend, 2010)
- c. Interdisciplinary learning will become increasingly common and more in demand than ever (Flynn, 2011c; Bullough, 2006). Higher education is currently structured as a group of silos – separate divisions or departments that rarely interact. "Creative, innovative teachers who want to explore the multidimensional aspects of their subject matter are still held hostage by the Carnegie unit, the need to break down content into 50-minute classes and three-credit courses" (Herman Miller, 2011, p. 5).
- d. Experiential learning such as cooperative education, internships, service-learning will be more in demand (Coward, 2010).
- e. UC Berkeley Extension Continuing Adult Education Program started a new certificate program in “green chemistry” to educate and train professionals who had not had green topics covered in their graduate or undergraduate education (Wilson, 2011).

5.4 *Technology is opening new program and curriculum options.*

- a. Informatics is a discipline that solves problems through the application of computing or computation, in the domain of the problem such as business, science, and the arts and humanities (Groth & MacKie-Mason, 2010).

- b. Robotics is a leading candidate for the next dramatic change in the computer science curriculum (Touretzky, 2010).
 - c. U.S. demand for information systems (IS) graduates is increasing, but graduation numbers from university IS programs are flat or in decline. IS programs must both increase their throughput of students and ensure that they are inculcating the skills set (at a higher level of complexity) that is of value to employers (Benamati, Ozdemir, & Smith, 2010).
 - d. Networking and partnering with local businesses helps to create curriculum that meets the needs of employers and opportunities for future employment for the students (Friend, 2010).
 - e. Students build free and open source software in classes to assist the local, national, and international communities with projects such as emergency preparedness systems, programs for registration and management of disaster relief volunteers and open medical record systems. This helps ensure that students are engaged in real-world projects with developers to see how software benefits society (Morelli, Tucker, Danner et. al, 2009).
 - f. Students of the new digital age need to start learning computer science at an early grade level (Wilson & Guzdial, 2010). However, college seniors who studied computer science generally showed little appreciation for skills involving creativity and reason, emphasizing instead computer science outcomes, so there is a need for more effective curricula to avoid this (Lewis, Jackson & Waite, 2010).
 - g. A merger of information technology with the arts and humanities is forming a new domain for information technology: Information Technology and Creative Practices (“ITCP”). ITCP impacts how people perceive, experience and use information technology. Forms and products of ITCP include architectural designs, computer animated films, music, computer games, Web-based text, and interactive art exhibits. Although ITCP groups tend to cluster geographically and benefit from proximity, they increasingly interact remotely electronically. ITCP's best-known products (such as video games) combine centralized research, development and marketing with large-scale open-source data-gathering and product distribution strategies. The academic environment is the seed-bed of ITCP innovation, but the multi-disciplinary nature of the activity presents a challenge in designing cooperative curricula (National Academy of Science, 2003).
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Society

Trend 1: San Diego County is receiving an increasing number of refugees. Many of these refugees come from Iraq, and choose to settle in east San Diego County (particularly El Cajon), where there is a growing community of Chaldean Iraqis.

- 1.1 Refugees are individuals who are unable to return to their country of origin because of persecution or a well-founded fear of persecution because of race, religion, nationality, membership in a particular social group, or political opinion. California has received more than 688,000 refugees since 1975. The largest refugee groups are currently coming from Iran, Vietnam, the former Soviet Union, Iraq, and Africa. Prior to 1990, refugees were primarily from Vietnam, Cambodia, and Laos in connection with the Vietnam conflict (California Department of Social Services, 2010). Refugees are designated as such for one year, are then considered permanent residents for four years, and may then apply for citizenship (10News, 2010).
- 1.2 Between 2005 and 2010, 41,220 refugees arrived in California. Almost 30% (12,310) of the new refugees in California in the past five years arrived in San Diego County. The number of refugees arriving in San Diego County annually grew from 796 in 2006 to 4,168 in 2009; 3,663 arrived in 2010. In the first quarter of the 2010-2011 fiscal year, 728 of the 1,538 refugee arrivals in California (47.3%) resettled in San Diego County. A larger number of refugee arrivals are expected during the last-half of FY2010-11 (Nguyen, 2011). Chaldean Iraqis are the fastest-growing refugee community in San Diego, followed by Burmese refugees and Somalis (10News, 2010).
- 1.3 More Iraqi refugees immigrated to California between 2007 and 2009 than to any other state. Over 70% of the more than 7,000 Iraqi refugees arriving in California during those years chose to resettle in San Diego County. Most of them choose to resettle within the GCCCD boundaries: 71% (3,552) choose to resettle in El Cajon, 5.8% (289) chose to settle in Spring Valley, and another 3.3% (164) settled in La Mesa. El Cajon had more Iraqi immigrants than the rest of the state combined (Steckelberg, 2009).

- 1.4 In California, the Federal Refugee Resettlement Program provides funds for employment, training, and support services, including English as a second language, job search assistance and on-the-job training. In FY 2010, 33% of San Diego refugees received targeted assistance, but schools in San Diego County did not apply for available Refugee School Impact Grants (Nguyen/2011).
- 1.5 Iraqi refugees interviewed by the International Rescue Committee (2009) in Atlanta, Georgia and Phoenix, Arizona reported difficulty finding employment, making it impossible for them to support themselves. Many of the Iraqi refugees are traumatized, and need additional support in the areas of financial assistance, English lessons, employment counseling and access to health care (International Rescue Committee, 2009).

Trend 2: Healthcare costs place an increasing demand on private and public funds, especially with an aging population.

- 2.1 The share of gross domestic product (GDP) devoted to health care has increased from 7.2 percent in 1970 to 16.2 percent in 2007. Health care costs have grown on average 2.4 percentage points faster than the GDP since 1970. (Kaiser Family Foundation, 2009).\
- 2.2 Three health behaviors (poor nutrition, lack of physical activity, and tobacco use) contribute to four diseases (heart disease/stroke, cancer, diabetes and respiratory disease) that cause more than 50% of the deaths in San Diego (San Diego County Health and Human Services Agency, 2010).
- 2.3 Obesity is common, serious and costly. In 2010, about one-third of U.S. adults (33.8%) were obese. In 2000, no state had an obesity prevalence of 30% or more. By 2010, 12 states had an obesity prevalence of 30% or more – up from 9 states in 2009. Obesity-related conditions include heart disease, stroke, type 2 diabetes and certain types of cancer. In 2008, medical costs associated with obesity were estimated at \$147 billion. Non-Hispanic blacks have the highest rates of obesity

(44.1%) compared with Mexican Americans (39.3%), all Hispanics (37.9%) and non-Hispanic whites (32.6%). In 2010, approximately 17% (or 12.5 million) of children and adolescents aged 2 to 19 years are obese – triple the rate from just one generation ago (Centers for Disease Control and Prevention, 2011b).

- 2.4 There also have been substantial increases in diabetes. In 2010, about 8.3% of the U.S. population had diabetes – up from 2.7% in 1990. Almost 27% of U.S. residents aged 65 years and older in 2010 had diabetes. About 35% of all adults over age 20 have pre-diabetes; over 50% of adults over age 65 have pre-diabetes. Diabetes is the seventh leading cause of death in the United States, and is a major cause of heart disease and stroke, kidney failure, non-traumatic amputation, and blindness. Overall, the risk for death among people with diabetes is about twice that of people of similar age but without diabetes. Medical expenses for people with diabetes are more than double the health care costs for people without diabetes. In 2007, medical costs associated with diabetes were estimated at \$116 billion (Centers for Disease Control and Prevention, 2011a).
- 2.5 A significant correlation exists between seeking cultural stimulation and being healthy in urban populations. Urbanites who often attend cultural events such as cinema, theater, art, and music are only 31% as likely to die of cancer as are people who rarely attend (Bygren et al., 2009).
- 2.6 The changing demographics of aging are critical for business and government to consider in long-range planning. As science and technology advance, so do life spans, which will impact the economic balance within countries between older populations and the younger populations that are traditionally expected to support the elderly. This may cause increasing tension between young and old (Wilson, 2007).

Technology

Trend 1: Technology is increasing access to information around the world, fostering increased communication and collaboration, and placing new demands on education.

- 1.1 The world of work is increasingly collaborative (New Media Consortium, 2011). Technologies that promote collaboration (cloud, social networking, etc.) will need to be augmented in educational environments (Trends to Watch in Education Technology, 2011).
- 1.2 Advancements in technology will drive ongoing changes in all aspects of the college and offer new opportunities to enhance and broaden learning experiences. Technological trends that could impact traditional forms of education include social networking, “always on” information technologies, decentralized information networks, and increasing emphasis on the collaboration that such technologies foster (Skiba, 2010).
- 1.3 More students are used to videoconferencing technology (using webcams or Skype) to communicate with people from long distances, and students have an increased expectation that this technology will be used so that absent students may attend class. Using videoconferencing enhances the opportunity to have guest speakers because no travel is involved. However, setting up the classroom for videoconferencing takes additional time and requires more technology support staff (Young, 2011).
- 1.4 Social media, like Twitter and Facebook and other sharing technology, will change in the next few years: social media will happen much more through mobiles; people will share on networks what they used to share on listservs; most companies will have a social media policy that they enforce (Armano, 2009).
- 1.5 Tablet PCs used in a slate format (which allowed for use of a stylus to write directly on the screen) can promote more fluid physical and verbal interaction between students (compared to Netbooks), resulting in more involvement by all in group discussions (Alvarez, Brown & Nussbaum, 2011).

- 1.6 The challenge for community colleges is to use technology to convey content more powerfully and efficiently, so that faculty can spend class time more productively (Rosen, 2011). Technological competence needs to be continually emphasized, especially with older faculty and staff. Professional development must provide training and support on using technology to enhance teaching and learning (Herman Miller, 2011).
- 1.7 Using an online course to prepare faculty to teach online can provide effective guidance and instruction while at the same time assessing a teacher's readiness to teach online (Riedinger & Roseburg, 2006).
- 1.8 Collaborative, online Professional Development Learning Environments (PDLEs) focused on problem solving can get faculty to pay more attention to higher order thinking skills rather than specific content, and shift from technical issues to those surrounding the processes of learning (vanOostveen, Desjardins, & Bullock, 2010).

Trend 2: New ways to create, publish and access information make it more difficult to judge the validity of that information.

- 2.1 Digital media literacy continues to rise in importance as a key skill in every discipline and profession (New Media Consortium, 2011).
- 2.2 Technology is providing new ways in which to get information to students through open resources, including free online reference material, podcasts, wikis, blogs and thousands of learning portals (Bonk, 2010). Educators will be supported by technology that connects them to data, content, resources, expertise, and learning experiences that can empower and inspire them to provide more effective teaching to all learners (The National Educational Technology Plan, 2010).

- 2.3 However, appropriate metrics of evaluation of the quality of these publications lag behind the emergence of new scholarly forms of authoring, publishing and researching (New Media Consortium, 2011; Skiba, 2010). The challenges of finding good content and changing classroom pedagogy to make the best use of new technologies (including mobile devices) must be addressed (Nastu, 2011).
- 2.4 E-books and digital textbooks may be available at a cost savings to schools. Digital textbooks increasingly embed shared online video, animations and simulations to enhance learning (Bonk, 2010).
- 2.5 The abundance of resources and relationships made easily accessible via the Internet is increasingly challenging educators to review their roles in sense-making, coaching, and credentialing (New Media Consortium, 2011).
- 2.6 As the result of the Internet Corporation for Assigned Names and Numbers' approval of a new top-level domain (.xxx for x-rated website content), naming conventions for website URLs (“.com” or “.org”) will expand beyond the few that currently exist. This could provide additional security and provide a better and more targeted search experience for consumers (Crawford, 2011).

Trend 3: The demand for mobile access to learning resources will rise as people increase their wireless access to networks and the Internet. However, the extent to which different groups have access to wireless resources varies widely, especially fast (broadband) connections.

- 3.1 As of May 2010, 59% of all adult Americans go online wirelessly, by using a laptop with a Wi-Fi connection or mobile broadband card, or by using the Internet, email or instant messaging on a cell phone. In 2009, 51% of adult Americans went online wirelessly (Pew Internet, 2010).

- 3.2 The use of personal mobile computing devices such as iPads, iPhones, Android devices, and netbooks is growing rapidly (Thiele, 2010). In 2010, nearly 50% of middle and high school students carried a smart phone (Nastu, 2011). Users are taking advantage of a growing number of cell phone capabilities such as taking pictures, recording videos, and accessing the internet (Pew, 2010).
- 3.3 More than half of all cell phone Internet users go online daily from their mobile device, and by 2015, 80% will be doing so. The percentage of students who use a mobile device to access the internet has increased from 10% to 43% in the last two years (Blackboard Mobile, 2011).
- 3.4 Mobile devices will change the way students learn (Trends to Watch in Education Technology, 2011). People expect to be able to work, learn, and study whenever and wherever they want (New Media Consortium, 2011). Students expect instant and on the go access to information, and are using their mobile devices for everything (Campus Technology, 2011; Nastu, 2011).
- 3.5 Colleges are undergoing a cultural shift to wireless technology as students demand increased bandwidth and Wi-Fi wireless access to the Internet (Campus Technology, 2011).
- 3.6 The technologies we use are increasingly cloud-based. As we turn to mobile applications for immediate access to many resources and tasks that once were performed on desktop computers, it makes sense to move data and services into the cloud. The challenges of privacy and control continue to affect adoption and deployment (New Media Consortium, 2011).

- 3.7 New technologies will continue to impact education. In the next year, electronic books and mobile devices will be the major technologies to watch. In two to three years, game-based learning and augmented reality (layering information over a view or representation of the normal world to enable users to access place-based information in intuitive ways) will expand. In four to five years, new technologies offering options for education will include gesture-based computing and learning analytics – data-gathering tools and analytic techniques to study student engagement, performance and progress in practice, with the goal of using the information to revise curricula, teaching and assessment in real time (Johnson, Smith, Willis, Levine & Haywood, 2011).
- 3.8 The digital divide will increase in terms of connectivity as well as in access to hardware (Thiele, 2010). Mobile learning presents significant issues of cost and accessibility for students who do not have the financial resources to purchase such devices (Nastu, 2011). About one-third of the 130,000 students attending the San Diego Unified School District do not have access to the Internet at home, with those students concentrated in the more ethnically diverse, lower income areas of the district (Magee, 2011). A greater percentage of white than Latino or African-American individuals have broadband access at home, although laptop ownership is now about even for these groups (Washington, 2011).
- 3.9 African-Americans and Latinos are significantly more likely to own a cell phone than are whites (87% of African Americans and Latinos own a cell phone, compared to 80% of whites), and outpace whites in their use of data applications on handheld devices (Pew Internet, 2010). However, people with the ability to go online on a computer at home are more engaged in a variety of uses of the Internet than are those who rely on access from work or a phone (Washington, 2011).

- 3.10 Smart phones, social networking and global connectivity are creating an ever-growing dependency on technology. In response, people are starting to desire more in-person, authentic interactions and connections to the natural world (JWT Intelligence, 2011).

Trend 4: Continued growth in and demand for online learning offers students more learning options and puts more demands on faculty.

- 4.1 Students embrace online and hybrid learning (Noaman, 2011), which provide more flexibility in addressing scheduling, family and time constraints, the cost of transportation and economic pressures (Distance Education University, 2011; Flynn, 2011c).
- 4.2 Online teaching is becoming more pervasive and will continue to grow (Ng, 2011; Trends to Watch in Education Technology, 2011). In fall 2008, 25.3% of all U.S. higher education students (3.6 million total) were taking at least one online course; this is a 17% growth over the previous year, compared to a 1.2% growth in higher education in the same period (Flynn, 2011c).
- 4.3 The use of online education in secondary schools also continues to grow, although opinions differ about whether the growth in online education in secondary schools is because it allows schools to offer credit recovery classes and relatively low-demand electives and Advanced Placement classes (when there are not enough students to fill a classroom), or whether online education is really driven by the deep education budget cuts caused by state and local budget crises (Gabriel, 2011).

- 4.4 The online classroom reflects a paradigm shift in curriculum delivery. Moving from a regular classroom to a virtual setting requires creating an engaging environment, learning how to communicate with students who aren't physically present, and individualizing instruction (Ash, 2011). Faculty need to transition to focus on facilitation of learning rather than presentation of knowledge (Pace, 2011).
- 4.5 Instructors who can integrate technology effectively in a face-to-face classroom are not necessarily ready to teach online. While some comfort with technology is essential, faculty need to rethink the way in which they lead the class, and become accustomed to allowing students to direct their own learning. Faculty must depend on data and online feedback to evaluate whether students comprehend curriculum. The online classroom requires faculty to develop a tailored set of time-management skills, including daily communication and planning lessons well in advance (Ash, 2011).
- 4.6 Learning Management Systems help instructors organize their content and provide some interactive options for students, such as chat, email, and digital drop box for submission of assignments (Pace, 2011). Most learning management systems are password protected to help authenticate that the student who registered for the course is the same student who participates in and completes the course or program (Compass Knowledge, 2010; Ng, 2011).
- 4.7 Evidence indicates that learning can be accelerated through online tutoring. Achieving content expertise and competencies in less time at lower cost through online learning systems appears possible, but it will require careful design, development, and testing (National Educational Technology Plan, 2010).

Trend 5. The use of technology will facilitate the development of new disciplines and career opportunities.

- 5.1 Information Technology (IT) is a new academic discipline that combines traditional areas of computer science, information systems, and engineering, with customer advocacy and integration of computer technologies (Lunt, Ekstrom, Reichgelt, Bailey & LeBlanc, 2010).
- 5.2 Information Technology and Creative Practices (ITCP) is becoming a new, multi-disciplinary domain for information technology. A merger of information technology with the arts and humanities, the forms and products of ITCP include architectural designs, computer animated films, music, computer games, Web-based text, and interactive art exhibits (Mitchell, Inouye & Blumenthal, 2003).
- 5.3 Computer and video game design and development programs and/or courses are offered at more than 300 universities and technical colleges across the U.S. These programs prepare students for careers in the growing video game industry (which grew 11.4% per year between 2005 and 2009), working as programmers, designers, developers, concept artists, 2 and 3 dimensional artists, animators, script and story writers (Education Software Association, 2010).

Trend 6. Technology places new demands on all college services.

- 6.1 Education systems at all levels will redesign processes and structures to take advantage of the power of technology to improve learning outcomes while making more efficient use of time, money, staff. Technology-based learning and assessment systems can improve student learning and generate data that can be used to improve the education system (National Educational Technology Plan, 2010).

- 6.2 Institutional technology plans (Kingsborough Community College, 2009; Washington State Board for Community and Technical Colleges, 2008) identify several key strategic issues for a community college utilizing technology. These strategic issues include:
- a. Teaching, Learning and Research:
 1. Ensure electronic access to textbooks, curriculum, and course material (e-Books). All courses should be web-enhanced even if they are not completely online. Use open resources, including widely shared, free course content and supplemental materials.
 2. Online teaching and learning tools, including virtual labs, applications, streaming, and simulation.
 3. Support libraries to provide reliable access to electronic resources and online course management.
 4. New delivery methods extend the reach of professional development, such as webinars and social networking software.
 5. Integrate information technology efforts with local public schools and four-year colleges so that transitions are seamless.
 - b. Student services, including an integrated online system where everything for student customer service is automated.
 - a. A one-stop portal should serve as a “dashboard” from which students can log in and have access to all their courses, financial aid accounts, educational plans, and grades.
 - b. Technology assistance must be provided for disabled students. The experience of taking a course with online content must be the same for all students. Online courses must be designed to provide built-in accommodation and/or content consistent with “industry standard” assistive computer technology. When links are provided to other web resources, those resources must be accessible as well. Professional development is needed to ensure that faculty understand what constitutes accessibility and recognize
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that methods which are adequate for short, simple or less important communications may not be equally effective or appropriate for longer, more complex, or more critical material (Distance Education Accessibility Guidelines Task Force, 2011).

- c. Enterprise Technology (Information Technology infrastructure)
 - 1. Enhance online communication and collaboration through robust portal technologies for students, faculty and staff.
 - 2. Communications through robust video teleconferencing and mobile technologies.

- d. Technology Support Services
 - 1. Help desk services are critical for user support.
 - 2. Online courses and use of videoconferencing in the classroom require more technology support staff (Young, 2011).

- e. Protecting Technology, Data and Assets.
 - 1. The open environment creates security concerns and the need for strong anti-virus and spam protection (Campus Technology, 2011).
 - 2. Online security awareness for all students, faculty and staff.
 - 3. A disaster recovery plan

.6.3 Colleges will be able to capture huge amounts of data, which they need to turn into “actionable insight” – understandings that are useful and that the colleges do something about (Trends to Watch in Education Technology, 2011).

Trend 7. Technology offers opportunities to reduce some costs, but budget reductions make it difficult to take full advantage of those opportunities.

- 7.1 Economic pressures and new models of education are presenting unprecedented competition to traditional models of the university (New Media Consortium, 2011). Excitement about changing practices and adding resources is tempered by budget concerns (Thiele, 2010).
- 7.2 The California budget crisis has encouraged the creation of more online communication and services including meetings, academic advisement, tuition payment, and financial aid along with providing the availability of more online classes (Kaufman, 2011).
- 7.3 The California budget crisis is encouraging the use of interactive Web casts and virtual labs for professional development. These are less expensive and more efficient options that result in educational and professional development opportunities across a wide range of campuses (Kaufman, 2011).
- 7.4 Total cost of ownership is the most important metric for making a technology adoption decision for both the academic sub-culture and the technologist sub-culture of an institution (van Rooij, 2011).

Economy

Trend 1: The jobs that are open require different skill sets than the skills unemployed workers have, resulting in structural unemployment that has led to a “jobless recovery” from the recession and that may cause a semi-permanent increase in the level of base unemployment.

- 1.1 Unemployment in California and in the San Diego region has increased in the recession.
- a. The unemployment rate in California ranked second-worst in the nation in the quarter ending March, 2011, ranging between 9% and 10%. Males are more likely to be unemployed than are females, and teens (ages 16-19) have a much higher unemployment rate, around 25% (Phillips 2011). The unprecedented numbers of applications for benefits has caused the California unemployment insurance system to become insolvent and on the verge of default. The state must pay back program loans by November 2011 or risk triggering an automatic tax increase in 2012. California also risks losing federal stimulus funds if it fails to upgrade its calculating formula for benefits prior to September 2012 (Lifsher 2011).
 - b. In December 2009, unemployment in the San Diego region was about 9.4%, compared to 9.7% in the State as a whole (Economic Modeling Specialists, 2010).
 - ◆ Regional unemployment was highest in agriculture (29.4%), construction (18.3%), information (14.2%), manufacturing (13.1%), administrative and waste services (13.2%), educational services (12.5%), and retail trade (12.4%).
 - ◆ Unemployment was much lower in real estate and rental/leasing (2.4%), professional and technical services (2.7%), wholesale trade (5.4%), healthcare and social assistance (5.5%), and transportation and warehousing (6.8%).

1.2 Jobs are available in some sectors of the economy. These include:

- a. Information technology. The computing job market will continue to grow strongly through 2018. Demand will surpass the supply of qualified applicants in the U.S., whereas in China supply outstrips demand. A shortage of qualified teachers has developed, including in India. Emerging problems that are arising from outsourcing are causing the return of some jobs to the United States (Hoffman 2010). More companies are hiring IT professionals, especially Project Management Professionals, Systems Engineers, Security Professionals and Technical Analysts, as the computer industry moves toward cloud computing (Bureau of National Affairs 2010).
- b. Health care. Between 2008 and 2018, health care is expected to grow. Demand will be high for registered nurses (Leighton 2010). States face increasing demand for eldercare, including infrastructure and delivery systems; 1.1 million new direct-care workers will be needed between 2008 and 2018. The Affordable Care Act (“ACA”) brings eldercare workforce policy innovations, such as programs supporting development of workers, training, and social insurance supporting elders and their families, but wages remain low (Dawson et al 2010).
- c. Automotive technology. Demand is projected to increase for highly skilled, entry-level certificated auto technicians (Dickson 2010).
- d. Green jobs. Interest increases in clean energy, green common areas, infrastructure and the “organic” built environment, such as “green roofs” and building materials, and urban horticulture. The mantra is “jobs.” From 1998 to 2007, clean energy jobs grew at 9.1%, 2.5 times as fast as jobs overall. The U.S. needs to move quickly in this direction to compete; 70-75% of the world’s solar and wind energy jobs are in manufacturing, but most solar panels and wind turbines are made outside the U.S. (Krause, Lowitt & Peck 2010). Expect growth in “green” jobs. Best among these will include conservation biologist, recycler, urban planner, and energy-efficient builder (Leighton 2010).

- 1.3 Many people looking for jobs lack the skills that the open jobs require – a condition known as structural unemployment. This condition may cause the unemployment rate to remain at 7% or more for years (The Economist, 2011). The weak housing market is making things worse; people who owe more on their mortgage than their house is worth often find it impossible to relocate for a job. The average person has been looking for a job for more than nine months, an all-time high (NBR, 2011).
- 1.4 The higher one’s education level, the lower one’s probability of unemployment (CPEC 2011).

Trend 2: Education and technical skills are becoming critical to the ability to earn enough to live on and support a family.

- 2.1 As the U.S. economy shifts away from manufacturing to become primarily service-producing, the wealthiest 10% of the population are getting wealthier, while middle-class wages are stagnating. Declines in labor unions coupled with worldwide labor competition contribute to the depressed wages of the middle class, particularly among those with just a high school diploma (Censky, 2011b).
- 2.2 Although women are expected to make up 47% of the work force by 2016, they are over-represented in low-paying, traditional occupations and underrepresented in leadership positions (Leighton 2010).
- 2.3 In 2010, salaries increased in finance and accounting, but decreased in marketing, business administration, management and liberal arts (Bureau of National Affairs, 2010). The highest pay was in the sciences (chemical engineering was highest, around \$66,000); business administration paid mid-level wages (around \$42,000), and liberal arts was lowest, around \$34,000.

- 2.4 The 20 highest-paying jobs in California requiring a bachelor’s degree are in the areas of education, finance, management, computers and recreation. The 20 highest-paying jobs in California requiring an associate degree include medical jobs such as nurse, dental hygienist, respiratory therapist, physical therapy assistant, and “techs” in radiology, veterinary lab, medical records, health information, biology and chemistry. Other top 20 jobs requiring an associate degree were in electronics, semiconductor processing, engineering tech, life, physical and social science tech, computer support/specialist, and paralegal (California Postsecondary Commission, 2011).

Trend 3: There is increasing demand for post-secondary educational institutions to provide skills training and preparation for targeted occupations. Many students, however, must go deeply into debt to pay for their postsecondary education.

- 3.1 U. S. manufacturers are finding it difficult to hire workers educated, trained and qualified to do the work in demand – much of which requires math, science and technical skills. A bias toward college preparation causes high schools to push students toward academic college-oriented career paths and away from vocational courses. To help meet their workforce needs as their current workforce ages (the median age of skilled manufacturing employees is 55, meaning they are approaching retirement), companies are partnering with community colleges to certify manufacturing programs, and to offer scholarships, internships, and job experience (Hagerty 2011a).
- 3.2 Costs increasingly impact college choice. More students (particularly lower income and minority students) are turning to public institutions (particularly community colleges) because of lower tuition costs. For-profit colleges are showing increases in minority enrollment due to affordability, open admissions policies and assistance with finding student federal loans (Stern 2011).

Trend 4: There is an increasing focus on Green jobs.

- 4.1 The federal Bureau of Labor Statistics and many state labor departments are undertaking studies of the labor market in green jobs and sustainable industries. The Workforce Information Council (2009) proposed the following working definition of a green job: “A green job is one in which the work is essential to products or services that improve energy efficiency, expand the use of renewable energy, or support environmental sustainability.”
- 4.2 The California Employment Development Department estimated that there were more than 37,700 green jobs in the San Diego region in 2009, and another 178,000 in the rest of Southern California (Centers for Economic Excellence, 2010). Green jobs accounted for about 2.7% of the over 1,404,500 jobs in San Diego County in 2009 (California Employment Development Department, 2011b).
- 4.3 In a report released in July 2011, the Metropolitan Policy Program of the Brookings Institution estimated that the San Diego region has 22,862 green jobs in 2010 (1.7% of all jobs in the region), ranking 21st among the nation's largest metro areas. Between 2003 and 2010, San Diego added 8,525 green jobs, for 6.9% annual growth in that sector. The largest segments of San Diego's green economy are in public mass transit, waste management and treatment, nuclear energy, conservation and organic food and farming. They estimated the median wage in San Diego's green economy to be \$45,016; the median wage for all jobs in the region is \$43,504 (Muro, Rothwell & Saha, 2011).
- 4.4 California community colleges will be essential to prepare students for green jobs. There are six green industry sectors, including energy, building, fuels, transportation, water, and environmental compliance. Community colleges can help students develop or enhance their green skills in three scenarios: (1) In existing jobs (teach gardeners about drought resistant plants); (2) To make workers more marketable (teach plumbers about solar water heaters); (3) To “allow transition to new jobs with new titles (teach welders to become geothermal technicians).” Community colleges need to adapt, provide or develop programs to meet those needs (Center for Excellence 2009).

Environment

Trend 1: Significant changes are needed to maintain the ability of the Earth to support its human population.

- 1.1 The Earth Policy Institute (Brown, 2011) identifies several factors that combine to present environmental challenges to the ability of the Earth's environment to support life: exponential population growth; depletion of aquifers in heavily populated areas; depletion of other natural assets (including forests, grasslands, and soils); and climate change causing increased incidence of drought, which reduces grain harvests, leading to rapid increases in food prices. This has significant implications for social and economic stability. Since 70% of world water use is for irrigation, water shortages translate into food shortages. Most of the top 20 countries considered to be "failing states" are depleting their natural assets (including aquifers, forests, grasslands, soils) to sustain their rapidly growing populations.

- 1.2 Four key actions are needed to address these environmental challenges, what Brown (2011) calls Plan B: (1) stabilize climate through an 80% reduction in carbon dioxide (CO₂) emissions by 2020 by increasing the efficiency of the world energy economy, replacing fossil fuels with renewable energy, and ending deforestation while planting trees; (2) restore the earth's natural support systems: reforestation, soil conservation, fishery restoration, and aquifer stabilization; (3) stabilize population through a shift to smaller families; and (4) eradicate poverty, which will be helped significantly by lower population growth. Brown (2011) argues that the funding needed to restore the earth's natural systems, stabilize population and eradicate poverty is under \$200 billion per year, which could come from a reallocation of national security funding to recognize these new, major threats to our security.

Trend 2: Environmental sustainability is a growing focus for colleges and universities.

- 2.1 Higher education institutions “hold a unique position in society, as they have the potential to promote and encourage societal response to sustainability challenges facing communities around the world through interactions of thousands of individuals on campus and outreach to millions” (Waheed et al., 2010, p. 720).
- 2.2 Colleges need a vision of a sustainable future to guide all facility development, including renovation of existing buildings, design and construction of new buildings, facility operations and maintenance, campus land use and outdoor recreation (U.S. Department of Energy, 2003). The primary objectives of this vision should include: (1) site/master planning that specifies goals of water independence and increased biodiversity; (2) reducing energy use for both new and existing buildings, and optimizing use of renewable energy sources; and (3) enhancing indoor environmental quality. Benefits of a vision of a sustainable future include reduced operating costs; reduced resource consumption; reduced site disturbance/site restoration; improved health and productivity of students, faculty and staff; increased quality of life for the community; and positive contribution to the surrounding natural environment and community.
- 2.3 Colleges should start their implementation of a sustainable future by establishing baseline data for all campus energy use (U.S. Department of Energy, 2003).
- 2.4 The University of San Diego (USD) partnered with AMSOLAR to install 5,000 solar panels that will generate 1.23 megawatts of renewable energy and meet 15% of USD's energy needs. Federal stimulus grant funds were used to cover the initial costs (Corpuz, 2009; Roscorla, 2009; Shallat, 2009).

Trend 3: The availability of water is an issue of growing concern in San Diego.

- 3.1 In San Diego County, water use during fiscal year 2008 was 692,000 acre feet. Of this amount, 59% was used in residential settings (with over one-half of this for landscaping), 18% was used in commerce and industry, 13% was used for public spaces, and 12% for agriculture (Guerrero & Haggard, 2009).
- 3.2 Rainfall contributes 10-20% of San Diego's water supply. The remaining 80-90% of water used in San Diego is imported from two sources: the Colorado River, through a 242-mile-long aqueduct, and from Northern California through the 444-mile-long California Aqueduct (Guerrero & Haggard, 2009).
- 3.3 The San Diego County Water Authority (SDCWA) is actively promoting water conservation education and using incentive programs to encourage voluntary water conservation. The San Diego region is increasingly focusing on desalinization technology and using recycled water for irrigation. SDCWA is a world leader in using technology to monitor pipes for leaks (Guerrero & Haggard, 2009).

Trend 4: There is growing investment and development of the sustainable energy sector.

- 4.1 In response to perception of a world-wide race to develop clean energy technologies, the U.S. Department of Energy is increasing its budget for research in renewable energy technologies, including solar, wind, geothermal and electric vehicles. Department of Energy support for research and development in hydrogen and fuel-cell technology and fossil-fuels is weakening, although these budgets are still as big as those for solar energy (Johnson, 2011).
- 4.2 The San Diego region has a strong environmental technology industry cluster made up of small and medium-sized water technology companies (Guerrero & Haggard, 2009).

Politics and Legal Issues

Trend 1: Increased legislative intervention affects the operations of the community colleges.

- 1.1 States are seeking new approaches to improve college performance statistics. For example, West Virginia is using a “carrot” approach, tying receipt of enhanced state funding to performance outcomes such as graduation rates, course completion, and college retention rates; Indiana is using a “stick” approach, cutting funding for colleges that don’t measure up (Williams, 2010).
 - 1.2 Arizona, Florida, North Carolina and Oregon have successfully implemented transfer degree programs that serve and graduate more students (Padilla, 2010).
 - 1.3 In September 2010, then-Governor Schwarzenegger signed SB-1440 (sponsored by Senator Alex Padilla), the Student Transfer Achievement Reform (STAR) Act, which:
 - a. Mandates that California Community Colleges (CCCs) create associate degrees (AA/AS) for transfer to a CSU with areas of emphasis;
 - b. Guarantees that students who earn the transfer degree are admitted to the CSU with upper division junior-year status;
 - c. Prohibits the CCCs from requiring additional courses for these transfer degrees (and non-collegiate, basic skills-level coursework may not be counted toward the units required);
 - d. Ensures that transfer students graduate with a bachelor’s degree with 120 semester units or 180 quarter units, certain majors excepted.
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An established general education transfer curriculum (either CSU GE Breadth or IGETC) will serve as the foundation of each transfer AA/AS degree program, with an additional 18 units of coursework designated as lower-division preparation for the major. SB-1440 is expected to increase efficiency by simplifying the transfer process and is expected to generate approximately \$160 million annually in cost savings. These savings are expected to provide access to about 40,000 additional community college students and nearly 14,000 California State University students each year (CCCCO, 2010).

- 1.4 Assembly Bill 2302 is a complementary bill to SB-1440 that encourages the University of California to also develop a transfer degree. AB-2302 was also signed by the Governor in September 2010.
- 1.5 In late March 2011, California's Assembly Higher Education Committee approved Assembly Bill 620, which would require CSU and CC campuses to adopt anti-harassment student conduct codes based on gender, provide awareness training for faculty and staff, and assign a campus ombudsperson. The bill's provisions would be optional for UC universities. As of June 15, 2011, this bill was under review by the Legislature. The CSU system opposes the bill citing the expense to implement it (Gardner, 2011).

Trend 2: More federal attention to community colleges includes expectations for increased productivity and accountability for student outcomes. However, new federal funding for community colleges has been concentrated in workforce training programs.

- 2.1 The American Graduation Initiative (AGI), a landmark proposal to provide new federal support for community colleges, did not survive the federal legislative process. The 10-year

plan announced by President Obama in July 2009 included funds to develop new and improved workforce training and other related programs, funds to support innovative efforts to increase college graduation and close achievement gaps, federal funding for facilities construction and renovation, and an "Online Skills Laboratory" that would support the development of open, free courses for high school and college career-oriented curricula. Although it was passed by the House of Representatives in fall 2009 as part of the Student Aid and Fiscal Responsibility Act (SAFRA), the AGI was eventually dropped from the reconciliation bill (which included national health care reform) passed in March 2010.

- 2.2 Two parts of the SAFRA did pass: significant changes to the federal student loan program (moving from private, subsidized lending to direct federal lending and using the savings to expand Pell Grant tuition assistance for low- and moderate-income students) and \$2 billion to help dislocated workers access training programs through the Community College and Career Training Initiative.

- 2.3 The White House held a Summit on Community Colleges in October 2010. The White House Summit highlighted federal support through the Community College and Career Training Initiative and the American Recovery and Reinvestment Act, which increases Pell grants and Work Study funds and provides funding for workforce training programs (White House, 2010).

- 2.4 Several new commitments from foundations and educational organizations to invest in strengthening community colleges were discussed at the White House Summit on Community Colleges (White House, 2010), including:
 - a. The Gates Foundation Completion by Design initiative, which will invest \$35 million over 5 years to develop educational pathways that make the educational process more responsive to students' needs and educational goals.

- b. The Aspen Prize for Community College Excellence, a \$1 million annual prize to recognize, reward and inspire outstanding outcomes in community colleges.
- c. Skills for America's Future, an initiative to build high-impact partnerships with industry, labor unions, community colleges and other training providers to support the President's goal of 5 million more community college graduates and certificates by 2020.

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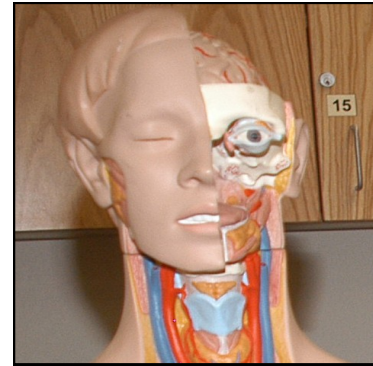
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The Educational Master Plan is intended to guide institutional and program development for a decade or longer at the colleges.



GROSSMONT-CUYAMACA
COMMUNITY COLLEGE DISTRICT

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