

**Education Taxonomy  
Summary of Trends and Findings**

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**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, 2011).
- 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 sixty 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 whites and blacks. (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. They do not relate to lecture mode (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 graduates from diverse backgrounds who had to overcome particular difficulties to succeed in their courses indicated that support and individual determination was seen as a key factor in the success of international students (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, 2011). 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 means 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 4-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 calls 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 one 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 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, 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. American Graduation Initiative: Miami Dade College is offering scholarships to encourage more students to attend college to meet Obama's college graduate goal of 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) can help to encourage students to be more prepared for college and increase numbers that go on to graduate. 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 that have higher lateral transfer rates than others (i.e. Black 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, 2011).
- 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 different 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 or higher, full-time

enrollment, higher degree expectations, and fewer paid work hours. Older students are more likely to obtain a 2-year degree and not transfer, while younger students are more likely to transfer without earning a 2-year degree. This type of information can be useful for identifying students at greatest risk for not fulfilling their goals, and 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 8 in 10 new job openings in the U.S. will require some workforce training or postsecondary education. And of the thirty fastest growing occupations in America, half 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 the 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, and therefore plays an important role in state, regional and local economic development by helping to prepare a skilled workforce (Flynn, 2011; 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 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
- 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, 2011).
  - f. During the past two years, there has been an increase in the number of Latinos that have enrolled in technical education programs. 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, 2011), 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 *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).

### **2.4 *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. 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.
- 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 larger at low current graduation rate schools than it is at the higher 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, 2011). 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 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 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 the state'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 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. In 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):
  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 studied. 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 credential/degree 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.
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:
  - o 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.
  - o 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 tend 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 that make up a significant portion of community college students. A three-part program is proposed (Kroder et al, 2009):

1. CC's 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 college work.
2. Teachers 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 restricts access and puts 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 2.7 million students (Hagerty, 2011).
- b. New federal funding tends to favor workforce training and STEM programs in institutions that enroll large numbers of minority students. the Health Care and Education Reconciliation ACT (HCERA) enacted in 2010 includes \$2 billion to help community colleges develop, improve, and expand education and career training to workers. It also included funding for Minority-Serving Institutions, including Hispanic Serving Institutions (25% Latino) 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). Adjusted for inflation, the median income actually declined by \$400 over that time period. (Herman Miller, 2011).
- d. There has been a fundamental shift to individuals bearing more cost of higher education, leading to families taking on unprecedented levels of debt (the average student loan bill of students graduating from 4-year institutions was over \$23,000) or choosing to pursue a 2-year degree instead. According to the Department of Education, the portion of middle-income students enrolled at a 4-year college has

dropped while the portion enrolled at a 2-year college has risen over the past decade (Censky, 2011).

- e. In March of 2010 President Obama signed a law that made the federal government the primary lender to student for the 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, student monthly payment of \$25; 3) deferred payment, student 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, 2011). Physical infrastructure on campuses is outdated yet we are unlikely to have the money to provide better spaces. (Herman Miller, 2011). 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 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 (continuing students who are fully matriculated and are making satisfactory progress toward their educational goals first, followed by new students, particularly recent high-school graduates, who have completed matriculation requirements, followed then by 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 (9000 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 (in a course series). CCs could offer the repeat of these classes as community service classes, fully supported by students fees. Expect 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 the 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 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, 2011). Predict large increase in the use of part-time faculty with low wages and no benefits. Gradual aging of the faculty; with 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." (HM, 2011, p. 9).
- b. Workplace bullying tends to increase as financial budgets decrease and funding for programs becomes scarce. Workplace bullying, 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 (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) (Arismendi-Pardi, Crawford & Kennedy, 2010). 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).

## **Trend 5: Changing priorities for funding of programs and disciplines.**

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

- a. California has over 300,000 teachers serving a student population of over 6,000,000. Projections are that demand for teachers will 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 the 2012 federal budget request President Obama challenged the country to prepare 100,000 STEM teachers over next decade (Morrissey, Hogue & Erickson, 2011).
  2. Without a qualified pool of STEM teachers who have degrees in these fields, we continue the cycle 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 US and emerging economies. Improving collaborations between 2-yr and 4-yr colleges in preparing STEM graduates is important in this effort; need to 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).

**5.2 *Less focus on the value of liberal arts and humanities despite their 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 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 to 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 our economic competitors on the Programme for International Student Assessment (PISA). Structural improvements (data systems & professional development) are not enough; a study of 9 nations that consistently outrank the U.S. on PISA showed little agreement on standards & testing, but one thing they all share in common is 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 US Department of Education are now beginning to recommend liberal arts curriculums for high school students. (Munson, 2011)
  - h. Humanities shift the focus back to 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 us (Dennis, 2011).

### **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. Defined the applied baccalaureate degree 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. Degree can facilitate baccalaureate degree completion for adults who accumulated some credits but failed to attain a degree and adults who had not enrolled in college. (Ruud, Bragg & Townsend, 2010)

- c. *Interdisciplinary* learning will become more in demand than ever. Inter-disciplinary learning will become increasingly common and popular. (Flynn, 2011; Bullough, 2006). Higher education 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) Technology may be a lever to accelerate this change.
- d. More demand for *experiential learning* such as cooperative education, internships, service-learning (Coward, 2010).
- e. A new certificate program at UC Berkeley Extension Continuing Adult Education Program in "*green chemistry*" to educate and train professionals who had not had green topics covered in their graduate or undergraduate education.

#### **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 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 were Computer Science students studied 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 to impact 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).