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TRENDS AND ISSUES

VALUING, MEASURING, AND FINANCING
HIGHER EDUCATION IN THE 21st CENTURY

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“A college degree is replacing the high school diploma as a mainstay for economic self-sufficiency and responsible citizenship. In addition, earning a bachelor’s degree is linked to long-term cognitive, social, and economic benefits to individuals, benefits that are passed onto future generations, enhancing the quality of life of the families of college-educated persons, the communities in which they live, and the larger society. For these reasons, it is imperative that we ensure access to higher education for all college-qualified low income and other historically underserved students, keep college affordable, and demand institutional accountability for student learning and graduation rates.”

--- Center for Postsecondary Research, “Connecting the Dots...,” August 1, 2006.”ⁱ

EXECUTIVE SUMMARY

For centuries, education has been valued as a means to critical thinking and scientific inquiry. Over time, additional benefits have become increasingly clear, and especially the economic benefits to individuals and society overall. Measuring the learning outcomes of higher education has proven to be more difficult, however, but is progressing through initiatives such as the National Forum for College-Level Learning. Many challenges exist in this rapidly changing world in which knowledge has become the standard currency and higher education struggles for the financial means to supply it. Issues regarding access, growth in competition, demands for accountability, and financial strains are among the many challenges of today’s top administrators. This report provides an overview of: a) the benefits of higher education, b) current initiatives that attempt to measure and promote successful learning outcomes, and c) challenges that administrators face in carrying out their educational mission.

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RECOGNIZING THE VALUE OF HIGHER EDUCATION

Purpose and Evolution of Higher Education

In the West, the origins of education stemmed from Greek, Roman and religious roots. Socrates, who lived in Greece from 469 to 399 B.C., is acclaimed for his development of critical thinking and the scientific method. He believed in inquiry and inductive reasoning, gathering and analyzing evidence, and then reasoning from the particular to the general. Socrates believed knowledge was valuable because it helps people become virtuous and happy, and he emphasized the importance of self knowledge. Socrates and his influential followers, Plato and Aristotle, all believed in the value of the State and its responsibility to meet certain needs of its citizens. Aristotle made the point that "the State exists for the sake of everyone's moral and intellectual fulfillment."ⁱⁱ

During the Dark Ages, Christian monks and priests ran monasteries and schools to develop positive virtues in the young. Medieval universities were established in Italy, France and England for the study of arts, law, medicine and theology. The Church of Scotland set out a program for spiritual reform in 1561 with a teacher for every church and free education for the poor. Throughout Europe, most schools up to the 19th century were either run by churches, or were private institutions financed by students' parents. By the time of the Industrial Revolution, however, demand was increasing for masses of disciplined and at least semi-literate workers.ⁱⁱⁱ

Early American Views on Education

John Adams drafted the constitution for the Commonwealth of Massachusetts nearly 10 years before the U.S. Constitution was signed in 1787. With its three-part system (Executive, Legislative and Judicial) the Massachusetts document served as the architectural model for the subsequent U.S. Constitution. Adams wrote that wisdom, knowledge and virtue were necessary for the preservation of the rights and liberties of the populace. He emphasized that the benefits "depend on spreading the opportunities and advantages of education in various parts of the country and among the different orders of the people." In addition to literature and science, Adams said that educational content should include agriculture, arts, commerce, manufacturing, natural history, among others. "To countenance and inculcate the principles of humanity and general benevolence, this will be part of what we teach. Public and private charity, frugality, honesty, punctuality, sincerity, good humor."^{iv}

Thomas Jefferson believed firmly in the value of education and in the right and need for everyone to be educated. In order for a democratic government to function effectively, he believed it was vital for citizens to be able to think critically and analytically so that they could formulate opinions and make rational decisions. He thought everyone should start out with the same simple education and then it should diverge along two tracks: one for the labor group to become better farmers or workers using their hands; and the other group to study science, medicine or law. The U.S. Constitution did not include provisions for education since the Founding Fathers believed the responsibility rested with the separate states. Jefferson spent the final years of his life building a better educational system for the state of Virginia, including elementary schools, high schools (called colleges at that time) and the University of Virginia.^v

Early American views of the purposes of education were firmly grounded in goals of democracy and enterprise: a) support of participatory government (more informed citizenry); b) support for fairness in individual opportunity for success; c) support for economic vitality; d) support for civic service; and e) support for achieving individual potential/satisfaction. Although the primary responsibility for the structure and financial support of education was granted to the states, the federal government has also adopted legislative measures to promote availability and quality of education. Noteworthy measures have included the land grant universities under the Morrill Acts for education in agriculture and military science and the G.I. bill to help World War II veterans learn new skills as they re-entered civilian life.

Current Views and Evidence of the Value of Higher Education

A recent survey of registered voters, sponsored by the American Council on Education as part of its “Solutions for Our Future” initiative, provided insights into Americans’ views about the value of education.^{vi} Asked to indicate the most important role for higher education, respondents answered as follows:

Role of Higher Education

Teach students to think critically	26%
Prepare students to solve problems facing our country	21
Prepare students for employment	18
Prepare students to be responsible citizens	14
Produce innovations that fuel economic development	8
Conduct research that benefits society	7
Serve the community	3

Source: ACE

U.S. Education Secretary Spelling's September 2006 report on the future of U.S. higher education addressed the value of education as follows: "In an era when intellectual capital is increasingly prized, both for individuals and for the nation, postsecondary education has never been more important. Ninety percent of the fastest-growing jobs in the new knowledge-driven economy will require some postsecondary education.... Colleges and universities must continue to be the major route for new generations of Americans to achieve social mobility. And for the country as a whole, future economic growth will depend on our ability to sustain excellence, innovation, and leadership in higher education."^{vii}

In their book, *Equity and Excellence*, winner of the "2006 Outstanding Book Award" by the American Educational Research Association, authors Bowen, Kurzweil and Tobin acknowledged that while creating "human capital" has always been a central purpose of higher education, American colleges have never considered themselves merely "practical." The authors quoted W.E.B. Du Bois: "There could be no education that was not at once for use in earning a living and for use in living a life."^{viii}

Economic and Other Benefits to Individuals and to Society

Individual Benefits

The economic benefits of education to individuals have been well documented. Greater education is related to lower unemployment and higher earnings, as shown in the 2003 Census Bureau data below:

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Economic Benefits of Higher Education to Individuals

Level of Education	Unemployment Rate	Median Earnings
Some high school, no diploma	8.6%	\$20,592
High school diploma	5.5	28,808
Some college, no degree	5.2	32,344
Associate's degree	4.0	34,944
Bachelor's degree	3.3	46,800
Master's degree	2.9	55,308
Professional degree	1.7	67,964
Doctorate degree	2.1	70,148

The College Board has documented how the gap in income between those with higher education and those without has widened over time. In 1972, median earnings for males with bachelor's degrees or higher were 22% greater than median earnings for male high school graduates. For females, the earnings premium for having a college degree was 40%. By 2005, typical male college graduates were earning 63% more than male high school graduates, and the premium for female college graduates had grown to 70%.^{ix}

Numerous studies have documented various non-economic benefits of education. Many of these relate to better health, both physical and mental. Specific studies have found that higher education is associated with increased physical activity, less smoking among pregnant mothers, better adherence to treatment for diabetes, less obesity, and reduced risk factors for heart disease.^x

Benefits to Society

Undoubtedly, many of the benefits of education to individuals also contribute to society overall. For example, lower unemployment and better health translate into fewer dollars needed for social services to support the poor and ill. Employees with higher education are more likely to have employer-provided health care and pension plans.^{xi} And the higher earnings of educated people translate into higher tax revenues for federal, state and local governments.

Relating back to goals of the Founding Fathers, higher education provides for a more informed citizenry and greater participation in the democratic process. According to the College Board report, voting percentages increase with education. From 1980 to 2004, the gap in voting rates has increased between those with higher education and those without a high school degree. The differences in voting patterns among the college educated and others are not all attributable to education. But controlling for other characteristics, the data suggest that *even enrolling* in college increases the probability of registering to vote by 18% and the probability of voting in a presidential election by 29%.^{xii}

Surveys about the value of education indicate that citizens believe it is beneficial not only to individuals, but to society as a whole. According to the same ACE survey report referenced earlier, 84% of Americans believe investing in colleges and universities today will help solve future problems.^{xiii}

Authors Newman, Couturier, and Scurry, in their 2004 book, *The Future of Higher Education*, present the issue as follows: “When a low-income student graduates from college; when a researcher solves a vexing mystery; or when a campus undertakes an open, thoughtful discussion of a complicated issue troubling society, it is not just the graduate, the researcher, and the audience that benefit; it is society as a whole.”^{xiv}

Knowledge Stocks and Statewide Standard of Living

A recent study by the Federal Reserve Bank of Cleveland examined determinants that explain differences among the states in per capita income. Economic theory would predict that capital mobility would lead to fairly quick convergence in per capita personal income across the states. And although significant convergence has occurred since the earliest year of the study, 1939, it has stalled since the mid 1970s at a level where the per capita income of the highest ranking state (Connecticut, \$45,566) is still nearly twice that of the lowest ranking state (Mississippi, \$24,397), based on 2004 data.^{xv}

The researchers found that there are identifiable factors associated with the income differences across states, and that the most significant factors are the “knowledge stocks,” the accumulation of productive information in the form of education and technology. The knowledge stocks were more significant than the other variables in the analysis, which included state data on public finance (such as tax rates), public infrastructure (such as

highway spending), various business measures (such as industry composition and bankruptcies), and climate.

The “knowledge stocks” cluster consists of three factors: a) percentage of the state’s population with at least a high school degree; b) percentage of the state’s population with at least a bachelor’s degree; and c) a state’s stock of patents, as provided in the *Annual Report of the Commissioner of Patents and USPTO*.

Controlling for other variables, the researchers quantified the state significance of the three knowledge factors as follows:

- Being one standard deviation (20 percentage points) above the states’ average in high school graduation rates led to 1.5% higher per capita personal income;
- Being one standard deviation (23 percentage points) above the states’ average in bachelor degree completion led to 1.4% higher per capita personal income;
- Being one standard deviation (75 percentage points) above the states’ average in the stock of patents per capita led to 3.0% higher per capita personal income.^{xvi}

The researchers noted that the measurement of patents serves to represent innovation: “We do not think that it is literally the income generated by patents granted to entities of a state that matter because most estimates of profits accruing to firms that hold patents are not particularly high. Patents are more likely serving as a proxy for firms that are innovative in a far wider variety of ways.”^{xvii}

In conclusion, the researchers gave the following advice to policymakers: “A state’s stock of knowledge is the main factor explaining its relative level of per capita personal income. If state policymakers want to improve their state’s economic performance, then they should concentrate on effective ways of boosting their stock of knowledge.”^{xviii}

Not surprising, the economic benefits of education go beyond state borders. Robert Hall’s research has produced evidence linking educational attainment and productivity across the globe. The findings provide “powerful support for the idea that education makes a genuine contribution and is not just a credential that raises individuals’ earnings. Raising the general level of education is almost certainly an appropriate top priority for a country aiming to raise its standard of living.”^{xix}

Higher Education as an Industry

In addition to contributing to higher income and productivity, the business of higher education is a sizable industry in its own right. In 2004, a total of 3.2 million people were employed at 4,216 degree-granting institutions in the U.S., serving 17.3 million students (including full-time and part-time students).^{xx} In addition to being sizable employers, colleges and universities add to the economy (especially in their region) through their purchasing and construction activities. Multiplier effects relate to employment and purchasing of employees of suppliers. Non-resident students and visitors also bring increased revenues into the state. Certain research indicates that as the proportion of college grads increases in an area, it also benefits the wages of less-educated workers in that area.^{xxi}

A number of institutions have conducted analyses of the economic benefits they bring to their state or region. For example, a recent study by Appleseed examined the impact of Ohio's three largest research universities—Ohio State University, the University of Cincinnati, and Case Western Reserve University—on the state's economy. The study indicated a total economic contribution in 2004 of \$6.2 billion and employment of 68,000.^{xxii} In another recent study, the Atlanta Regional Council for Higher Education estimated that the colleges and universities in the metropolitan Atlanta area produce an annual economic impact of \$10.8 billion and 130,000 jobs for the state of Georgia.^{xxiii} Many other regions, states and institutions have compiled documentation and analysis of the economic benefits of colleges and universities.

The Benefits of Research Universities

Research universities often are the center of a region's research and development of new technologies and scientific findings. This can result in patents and lucrative technology transfers, as well as spillover effects that stimulate increased research and development in regional private businesses. The value of research grants to universities from federal agencies and other grant-making organizations can make up a sizable percentage of a research university's budget. For example, a report last year in the *St. Louis Commerce Magazine* indicated that Washington University's medical research center received 885 awards from the National Institutes of Health (NIH) in 2004 totaling \$385 million. Certain research universities receive more than \$1 billion in annual research grants. Overall, the NIH invests about \$28 billion annually in medical research with more than 80% of it going to researchers at approximately 3,000 universities, medical schools and

other research institutions.^{xxiv} While the NIH is often the largest source of university research grants, other significant grant-makers include the National Science Foundation and the Departments of Defense, Energy, Agriculture, and Transportation.

In a statement last year to a Congressional subcommittee, the president of the Semiconductor Industry Association, George Scalise, spoke about the value of university research as follows: "Basic university research provides the critical foundation for the \$17 billion invested annually in R&D by U.S. semiconductor companies." Scalise was making the case for additional funding by the Defense Department to the Focus Research Program, a group of 33 universities nationwide that are engaged in the development of advanced microchip technology.

An article in the *Texas Business Review* discussed overall benefits of research universities as follows: "Knowledge and technology transfer are fundamental to the university mission. Research and development (R&D) investments translate directly and indirectly into the development of industry clusters and the overall betterment of local economies. Knowledge transfers to industry not only as graduates enter the workforce, but also as university faculties interact with industries and communities through lectures, consulting work, conferences, and volunteer projects. Universities also formally transfer technology through the incubation of new firms and the licensing of technology developed by university research."^{xxv}

The roles of research and universities are illuminated by John Taylor in a paper called, "Managing the Unmanageable: in the Management of Research in Research-intensive Universities." Taylor wrote as follows: "Basic research....creates the new knowledge that is the ultimate source of most innovation in the economy, society and culture; and provides a framework for an education through which the skepticism, creativity, and high level capability that society needs are embodied in people.... Research-intensive universities that couple world-class research and education provide the most efficient means of providing this combination of basic research and research-based education."^{xxvi}

A project involving MIT and the University of Cambridge has found that universities are most successful in influencing economic growth when they are attuned to the economic structure of their local economies and become a partner with industry. Types of industrial transformation may include: indigenous creation, transplantation, diversification into related industries, and upgrading an existing industry. When a new industry is being created, the role of the university may be to serve as a broker between the university's

researchers and local entrepreneurs. If the location is a mature industrial region, the institution may need to facilitate and provide technical support. For example, the MIT report described how the University of Akron took its rubber expertise and transformed it into producing different types of polymers.^{xxvii}

MEASURING LEARNING

Educational Attainment (Quantity)

Most of the available research that attempts to measure student learning and outcomes focuses on levels of attainment. And, indeed, the number of years that a person is engaged in education generally translates into higher achievement. College attainment has grown dramatically among the U.S. population over the past 60 years, from an average rate of 4.6% of the adult population in 1940 to 24.4% in 2000.^{xxviii} In addition, one out of every three college graduates has an advanced degree.^{xxix}

Although college attainment has made significant strides, the Spellings report is quick to point out that it is not equally achieved. “By age 25-29, about 34 of every 100 whites obtain bachelor’s degrees, compared to 17 of every 100 blacks and just 11 of every 100 Latinos.” The authors note that the disparities in college attainment are significantly related to family income. “Only 36 percent of college-qualified low-income students complete bachelor’s degrees within eight and a half years, compared with 81 percent of high-income students.”^{xxx}

Some analysts have questioned in recent years whether the quantity of schooling has been emphasized at the expense of quality. A report by the International Monetary Fund (IMF), “Why Quality Matters in Education,” says that the policy challenges facing most countries at the beginning of the 21st century have more to do with quality rather than quantity.^{xxxi} The report measures “quality” by achievement in math and science scores in the labor force, and found a strong relationship between quality and economic growth. “Clearly, human capital can be built up by providing more schooling, but policies that fail to consider the quality of schooling risk expanding quantity without truly expanding human capital. Likewise, development policies that fail to take into account the overall structure of an economy are likely to expand school attainment with little measurable improvement.”^{xxxii}

Assessment of Student Learning (Quality)

Higher education stakeholders increasingly are emphasizing the need for appropriate and valid measurements of student learning. Policymakers, taxpayers and higher education consumers all are demanding assessment of the learning component so that they may have a better understanding of their return on investment. Stakeholders also want benchmarks so that they may make valid institutional-level and state-level comparisons. In addition, institutions are extremely interested in assessing their student outcomes relative to their mission objectives and in identifying specific areas needing improvement.

A number of initiatives are wrestling with the challenge of measuring the value of higher education and, particularly, student outcomes. One of the most prominent is the National Center for Public Policy and Higher Education's program, called "Measuring Up," that provides a biennial state-by-state report card on higher education. The first report, published in 2000, established letter grades, from A to F, in five key areas: a) preparation for higher ed; b) participation in higher ed; c) affordability; d) completion; and e) benefits.

The sixth key area, student learning, was not evaluated in the initial report because sufficient data were not available; as a result, all 50 states received an "Incomplete" in that area.^{xxxiii} The report card stated that "there is no information available to make state-by-state comparisons" of higher education's most important outcome, learning. The primary purpose of the Incomplete was to promote progress in developing measurements for learning.

National Forum on College-Level Learning (NFCLL)

Shortly after the 2000 report was released, an invitational forum of public policy, business, and education leaders was convened to advise the National Center about next steps to address the issue of student learning at the state level. Forum participants urged the National Center to proceed with a demonstration project to determine the feasibility of collecting the appropriate information that would be useful to state policy leaders. Margaret Miller, Professor at the Curry School of Education at the University of Virginia and a TIAA-CREF Institute Fellow, led the five-state (Illinois, Kentucky, Nevada, Oklahoma, and South Carolina) demonstration project, called the National Forum on College-Level Learning (NFCLL). The full report, released in October 2005,

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concluded that providing comparative state-by-state information about learning was feasible, and that the results would be important and useful for policy. (Dr. Miller is a TIAA-CREF Institute Fellow and is author of a forthcoming *Trends and Issues* report on learning assessment.)

The demonstration project provided the NFCLL an opportunity to examine two important national challenges in the realm of college learning: a) performance gaps by race/ethnicity; and b) uneven state performance in training future teachers. In their “Measuring Up on College-Level Learning Report,” authors Miller and Peter Ewell wrote that “the notion of educational capital that forms the conceptual foundation of the National Forum’s work emphasizes the need to educate *everybody* in order to sustain economic and civic vitality. Performance gaps in learning, if they continue, will seriously erode state and national competitiveness—especially as the diversity of young adults in many states increases.”^{xxxiv}

The NFCLL recommended that all states adopt the National Forum’s model because it provides useful information and comparisons for state policy and because it can serve as a stimulus for making improvements. The State Higher Education Executive Officers (SHEEO), through its “National Commission on Accountability,” has endorsed the recommendation for all states to participate in the College-Level Learning initiative.^{xxxv} The two critical questions that are addressed in the NFCLL model are:

- What is the “educational capital,” or the knowledge and skills of the population, that states have available to them for developing or sustaining a competitive economy and vital civil life?
- How do all the colleges and universities in the state (that is, public, private, not-for-profit, and for-profit) contribute to the development of the state’s educational capital?

In the NFCLL model, indicators of learning are grouped into three primary assessment clusters, which are weighted by significance.

1. Literacy Levels of the State Population (25%). This cluster, based on the National Adult Literacy Survey (NALS) and the National Assessment of Adult Literacy (NAAL), reflects the proportion of the state’s residents that achieve high levels of literacy.

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2. **Graduates Ready for Advanced Practice (25%).** These indicators examine the proportion of the state's college graduates (both from 2-year and 4-year institutions) who are ready for advanced practice in the form of vocational/professional licensure (such as nursing or physical therapy licenses), graduate study (examinations such as the GRE or MCAT), and teacher preparation (teacher licensure exams).
3. **Performance of College Educated (50%).** This set of indicators addresses graduates' abilities to solve problems and is based on the American College Testing WorkKeys assessments for two-year institutions and the Collegiate Learning Assessment (CLA) at four-year institutions. The CLA exam, developed by the Council for Aid to Education along with the RAND Corporation, goes beyond multiple-choice testing to include written essays based on content analysis, and is designed to assess students' abilities in critical thinking, analytic reasoning and written communication.^{xxxvi}

In the “Measuring Up 2006” biennial report, although most states still received an “Incomplete” in Learning, a portion of the student learning data-- that related to preparation for advanced practice—was provided for all 50 states.

National Survey of Student Engagement (NSSE)

Another initiative that has achieved wide acceptance for its ability to measure predictors of positive student outcomes is the National Survey of Student Engagement (NSSE), located at the Center for Postsecondary Research in the School of Education at Indiana University. More than 1,000 institutions have participated in the survey, conducted annually, that measures effective educational practices in the areas of: a) level of academic challenge; b) active and collaborative learning; c) student-faculty interaction; d) enriching educational experiences; and e) supportive campus environment. The survey is conducted of first-year students and seniors with results presented not only nationally but also within Carnegie Classification groups. In addition, student distributions are provided for the top-performing 10% of participating institutions.

Subsequent academic research has confirmed the validity of the NSSE to measure effective institutional practices. Activities of student engagement measured by the NSSE have proven to provide “modest positive effects” on first-year grades and persistence, according to a recent report, “Connecting the Dots....” In the report, the researchers

found that while student engagement practices are helpful to all students, “..historically underserved students benefit more from engaging in these activities than White students in terms of earning higher grades and persisting to the second year of college.”^{xxxvii}

The NSSE administers the survey on behalf of participants and provides institution-specific reports of the results. According Ewell, vice president of the National Center for Higher Education Management Systems, the “NSSE is as good as it gets as a tool for examining institutional and student behaviors related to learning—practices that point directly to things that faculty and institutional leaders can do something about.”^{xxxviii} Additional surveys on student engagement have been developed for community colleges, law schools and high schools.

Role of Accrediting Agencies

In two recent reports of national prominence, educational thought leaders referred to the essential role of accrediting agencies in establishing and reviewing assessments of student learning and emphasized the importance of facilitating comparisons between specific institutions and categories of institutions. According to the Spellings Commission report, “Accreditation agencies should make performance outcomes, including completion rates and student learning, the core of their assessment as a priority over inputs or processes.”^{xxxix}

Similarly, the Educational Testing Service’s 2006 report, “A Culture of Evidence: Postsecondary Assessment and Learning Outcomes,” proposed a comprehensive national system for determining the nature and extent of college learning, focusing on four dimensions of student learning: a) workplace readiness and general skills; b) domain-specific knowledge and skills; c) soft skills, such as teamwork, communication and creativity; 4) student engagement with learning. The ETS authors recommended that the six regional postsecondary accrediting agencies be charged with integrating a national system of assessing student learning into their ongoing reviews of institutions.^{xl}

The ETS report praised the progress to date of the National Forum on College Level Learning and indicated that the ETS recommendations would build upon that “excellent work.” The ETS approach would focus on the impact of the institutions, relative to their peer groups, in contributing to student learning. Assessments would cover both broad reasoning capabilities as well as expertise in one’s specific field. Nationwide sampling of students, both before and after their college experience, would provide benchmarks

against which a particular institution's results would be measured. The ETS also commended the work on student engagement by NSSE while indicating that "student engagement is not, in itself, an index of student learning....(but rather) an index of the nature and extent of the student's active participation in the learning process."^{xli}

Associations' Involvement in Accountability

A number of higher education associations also have taken initiatives in learning outcomes and accountability, as follows:

1. The creation of the Commission on Accountability for Higher Education by the State Higher Education Executive Officers (SHEEO), <http://www.sheeo.org/account/comm-home.htm>
2. The 2004 report of the Business-Higher Education Forum (co-chaired by California State University Chancellor Charles Reed), "Public Accountability for Student Learning in Higher Education," that calls for all institutions to be far more aggressive in collecting and reporting information about educational results, <http://www.bhef.com/initiatives/publicaccountability.cfm>
3. An accountability proposal by the Association of American Colleges and Universities (AACU), "Our Students' Best Work: A Framework for Accountability Worthy of Our Mission," which calls for states to provide public evidence of learning outcomes for all academic programs, <http://www.aacu.org/issues/assessment/index.cfm>

MAJOR CHALLENGES FOR HIGHER EDUCATION

The Critical Issue of Access: Affordability and Preparedness

While college enrollment rates have increased for all income groups over the past 30 years, the gap in enrollment rates between the top quartile of income and the bottom quartile remains enormous. According to a College Board report, "an individual's chances of entering....college remain closely correlated with family background. Only 54 percent of high school graduates from the lowest income quartile enroll in college, compared to 82% of those with incomes above \$88,675.^{xliii} And, as also noted, the gaps in college

graduation rates between the highest and lowest income groups are far greater than the gaps in enrollment.

Because underrepresented minority students on college campuses are more likely than other students to come from low-income families, college enrollments in the U.S. also contain a race gap. In particular, African Americans, Hispanics and Native Americans are much less likely to enroll in college than their non-minority peers. In its 2003 report on college pricing, the College Board reported that about 65% of white 16-to-24-year-olds had enrolled in college compared to about 55% of African Americans and about 50% of Hispanics.^{xliii}

The Spellings Commission pointed its finger at rising tuition rates as a significant factor in the disparities in college enrollment rates: “From 1995 to 2005, average tuition and fees at private four-year colleges and universities rose 36 percent after adjusting for inflation. Over the same period, average tuition and fees rose 51% at public four-year institutions and 30% at community colleges.”^{xliv}

The lack of affordability for low-income families results not only from tuition increases that have exceeded inflation rates, but also from the gap in family income between the affluent and those at the bottom of the income distribution. As stated by Bowen, Kurzweil and Tobin, “It can be argued that the increase in tuition as a share of family income cited by various commentators is due more to stagnating family income for low-income families than to tuition increases.” The authors referred to Census Bureau data showing income disparities in 2003, below.^{xlv}

Median Household Income by Groups, 2003

White Families with children under 18	\$61,970
Black Families with children under 18	30,547
Hispanic Families with children under 18	32,073

Compounding the problem of rising tuitions and a growing gap in income levels, higher education institutions in recent years have been increasing the proportion of merit-based financial aid and decreasing the proportion of need-based aid. The Spellings Commission report found fault with the trend in tuition discounting that rewards merit at the expense of need, and also with the growing levels of student debt.

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In addition to the affordability issue, many higher education observers cite lack of preparedness as another significant barrier to access. Authors Bowen, Kurzweil and Tobin state that “weak academic preparation has the most significant and damaging impact. Poor and minority children frequently grow up in impoverished neighborhoods and attend primary and secondary schools that are far less well equipped to educate them than schools attended by their more privileged peers.”^{xlvi}

Growth in Minority Population; Addressing Achievement Gaps

Significant changes are projected in the racial/ethnic composition of the country over the next 50 years. The overall U.S. population is projected to reach 420 million in 2050, with expected changes in composition as shown below.

	% of Pop. (2000)	% of Pop. (Est. 2050)
Whites alone (not Hispanic)	69.4%	50.1%
Blacks alone	12.7	14.6
Asian alone	3.8	8.0
Hispanic	12.6	24.4
All Other	2.5	5.3

Source: Census Bureau. *(Please note that Blacks, Asians and All Other are slightly overstated since they include some mixed races already captured in Hispanics)*

According to James Duderstadt, “Those groups we refer to today as “minorities” will become the majority population of our nation in the century ahead, just as they are today throughout the world and in an increasing number of states, including California, Texas, New Mexico, and Hawaii (and soon Arizona, New York, and Georgia). In this future, the full participation of currently underrepresented minorities will be of increasing concern as we strive to realize our commitment to equity and social justice.”^{xlvii}

A report in “Science and Engineering Indicators 2000” discusses continuing achievement gaps between various racial/ethnic subgroups. “For example, in NAEP’s (National Assessment of Educational Progress) 2000 mathematics assessment of grade 12 students, 74% of white students and 80% of Asian/Pacific Islander students scored at or above a level deemed basic by a national panel of experts. In contrast, 31% of blacks, 44% of Hispanics, and 57% of American Indians/Alaskan Natives attained this level.”^{xlviii}

Margaret Miller, in a recent report of the National Center for Public Policy and Higher Education, discussed the implications of the performance gap as follows: “The analysis strongly suggests that students of color, the fastest-growing part of our student population, continue to be underserved by our educational system even in college. Given that other nations are overtaking the United States in the proportion of young residents earning a baccalaureate degree, and that states’ and our nation’s future prosperity depends on these students, the performance gap is worthy of concentrated policy attention.”^{xlix}

Increasing Competition –Domestic and Global

Ever mindful of their position in rankings such as those produced by *U.S. News & World Report*, colleges and universities have intensified their competition for students, faculty, research dollars, donors, awards, and prestige of all kinds. Financial aid packages increasingly are used as a competitive tool, designed to attract students with high test scores and GPAs. A paper by “The Futures Project” refers to the rising costs to stay competitive related to ramping up campus technology infrastructures, competing for star professors, developing honors programs, and engaging in a “war of amenities” such as fitness centers and gourmet cafeterias.¹

Newman, Courturier and Scurry, in *The Future of Education*, discuss the growth of for-profit, degree-granting universities and colleges in the United States, now estimated at more than 600.^{li} Some observers worry that many of these focus solely on high-margin sectors of education, such as executive education, and thus skim the profits of non-profits who serve broader purposes and constituencies. In addition, the number of online courses has exploded, with estimated enrollments exceeding three million students.^{lii}

Regarding global competition, a report by the Center for Studies in Higher Education noted that the United States ranked only 13th among OCED countries in 2002 in the percentage of the population that enters postsecondary education and then completes a bachelor’s degree or higher. The authors referred to at least four causes for erosion in U.S. education: 1) stagnation (and even declines in some states) of high school graduation rates; 2) declining political interest and government investment in public higher education; 3) increased fees, without adequate increases in financial aid; 4) the possibility that all mature higher ed systems, such as in the U.S., may reach a point of equilibrium---a leveling off of participation rates.^{liii}

Perhaps even more disturbing is the decline of bachelors-level degrees in science and engineering in the United States. The National Science Board, in its *Science and Engineering Indicators 2004* report, indicated that since 1990, bachelor's degrees in engineering in the U.S. have declined by 8% and degrees in mathematics have dropped by about 20%. In addition, the percentage of U.S. college graduates with majors in natural sciences and engineering in 2000 was only 5.7%, compared to higher percentages in at least 16 other countries.^{liv}

Meanwhile, the percentage of research doctorates earned by foreign students has steadily increased at U.S. institutions to more than 30%, or 13,000 out of 40,000 in 2002. In contrast, the absolute number of doctorates awarded to U.S. citizens in all fields declined by more than 5% between 1972 and 2002, “with especially steep declines in the physical sciences and engineering,” according to Bowen.^{lv}

Financial Strains, and the Growing Plight of Public Institutions

Public universities tend to suffer financially during and after recessions, and the recession of 2001 was no exception. From 2001 to 2005, educational appropriations per student decreased 18.2% in inflation-adjusted dollars, from \$7,124 to \$5,825. Institutions found it necessary to raise net tuition on a per-student basis over that period by 13%, from \$2,939 to \$3,371.^{lvi} As a result, net tuition as a percentage of total educational revenues at public institutions has grown from 29.5% to 36.7%, according to the annual higher education finance report by the State Higher Education Executive Officers.^{lvii}

In a Brookings Institution report, authors Thomas Kane and Peter Orszag cite a number of measures indicating public institutions' relative decline: a) loss of ground relative to private institutions in *U.S. News & World Report*; b) decline in faculty salaries relative to those at private institutions; c) growing gap in student-teacher ratios; d) relative decline in SAT scores of incoming undergraduate students at public universities.^{lviii}

The American Association of University Professors, which has tracked faculty salaries since 1970, indicated in its 2004-2005 Salary Report that the ratio of the average salary of a full professor at a public doctoral university to that of a full professor at a private doctoral university currently stands at .77, the lowest level throughout the survey's 34-year history, compared to .91 in 1970.^{lix} A natural concern is that, given the trends in per-student spending and faculty salaries, top faculty talent will be attracted increasingly to private institutions instead of public institutions.

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Another ramification of reduced state support and overall financial pressures has been the growth of part-time and non-tenure-track faculty. A report by John Curtis at the American Association of University Professors (AAUP) documents the changes in faculty appointments over nearly 30 years.^{lx}

**U.S. Faculty Composition at 2-year and 4-year Colleges & Universities
(1975-2003, Source: AAUP)**

	1975	2003
Full-time tenured and tenure-track faculty	56.8%	35.1%
Full-time non-tenure-track faculty	13.0	18.7
Part-time faculty	30.2	46.3

Research by Ronald Ehrenberg and Liang Zhang suggests that the increased usage of part-time and or full-time non-tenure-track positions adversely affects graduation rates at four-year colleges, with the largest impact on students occurring at the public master's level institutions.^{lxi} Contingent faculty members often have heavier teaching loads and/or considerable employment responsibilities elsewhere that may limit their time available for individual students and department involvement. In addition, as students experience less contact with tenured and tenure-track faculty, they may lack the type of mentors needed to encourage them to attend graduate school.

As stated by Eduardo J. Padron, president of Miami Dade College, it is difficult to get economies of scale in education. "Unlike a traditional business that benefits from economies of scale, colleges and universities find few opportunities to cut costs without affecting quality. Generous interaction between students and faculty remains a cornerstone of learning."^{lxii}

F. King Alexander, president of California State University at Long Beach, argues that American higher education is at risk because of the privatization of public higher education institutions and the reduced commitment by state legislators. He argues for a number of new federal policies that would encourage states to maintain or increase tax support for public universities and stem the trend of families having to pay increasing portions of their children's higher education.^{lxiii} Alexander's proposals include the following: 1) A federal program that would impose disincentives on states that provide inadequate or declining state support; b) A federal program of incentives to states to stabilize their financing of public colleges and universities, similar to Medicaid and Title

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I federal directives in elementary and secondary education; c) A federal mandate that all institutions—both public and private—use the “net tuition” or average “net cost” of attendance instead of the stated “sticker price” in all federal grant and loan programs. ^{lxiv}

MEETING THE CHALLENGES

Some of the risks of insufficient financial and other support of higher education are outlined as follows by the Futures Project^{lxv}:

- Increases in the gaps between the haves and the have-nots.
- Limited access to lower-income families.
- Declines in overall literacy.
- Elusive outcomes-----lack of accountability.
- Success will be achieved only by the wealthy who have savvy parents navigating the course.
- Liberal arts curricula will shrink.
- Flagship public colleges and universities will move toward privatization, reasoning that they can replace dwindling state funds by tapping into other revenue streams.
- Possible loss of credibility in that research that is overly dependent upon corporate sponsorship may not be sufficiently objective.

Facing challenges in higher education is nothing new. Financial and social crises are recurring themes in higher education as it reflects the larger societal dynamics. But today’s challenges are different from those in the past and need to be met in different ways. In an increasingly competitive world, education plays a vital role in contributing to greater productivity and innovation. And in a society whose population mix is increasingly shifting to segments with traditionally lower levels of academic achievement, a cohesive commitment to bolstering support for all levels of their education will be critical to our country’s vitality and positioning in a knowledge-driven world.

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