

# **Linking Measures of Quality and Success at Community Colleges to Individual Goals and Customer Needs**

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## **I. Introduction**

Three major trends have contributed to the heightened prominence and expanded missions of two-year colleges within the nation's educational enterprise. The first is the increasing technical nature of work and, therefore, the growing number of jobs requiring more than twelve years of education. The second is the increasing demands and appetite of small- and mid-sized enterprises for more technology and information. The third is the increasing expectations and demands among parents and youth for postsecondary education—apparently either regardless or unaware of the income and employment potential of many mid-skilled jobs and regardless of college readiness.

This paper contends that there are specific and relatively new characteristics of community colleges and that they have implications for federal vocational education policy. One is that postsecondary vocational education in community colleges is a highly diverse enterprise and substantially different from the secondary vocational system with respect to the range and mix of customers and institutional settings and services. This difference affects the structure and timing of the learning process, measures of performance, and uses of federal funds, and raises the question of whether it is time for postsecondary vocational education to be treated under separate legislation to avoid both the recurrent competition for funds at the federal and state levels, as well as the need for a single state agency responsible for both levels of education. The other distinction is the implicit and explicit focus of community colleges on their regional economies. This influences the range of and priorities among services, programs, and missions and the associated student and economic outcomes and impacts.

These two premises suggest different forms of information and different studies than past national assessments. To fully understand the current nature of the community college enterprise and to assess its performance and needs, the Congress would benefit from knowledge about: (1) individuals' goals and expectations for postsecondary vocational education and the ways they

choose to use the system; (2) colleges' decisions concerning missions, alliances, and investments and, correspondingly, businesses' use of and linkages to colleges; (3) the impacts of colleges on regional labor markets and economies and the effects of labor markets and economies on students' choices and chances; and (4) the innovators and catalysts for innovation. Very little of this information can be found in existing databases, thus requiring new data collection and analysis.

## **II. The Case for Vocational Education in Postsecondary Institutions**

Two-year institutions of higher education, in many ways, have been anomalies within America's educational enterprise. Lacking the guidance and support from the federal government that has been given to four-year institutions in federal legislation since the Morrill Act in 1862, and to secondary vocational education since the Smith-Hughes Act of 1917, community colleges have been left to their own devices and/or home state's interests to carve out their particular niches. Without clear-cut missions, they often developed in the image of and as appendages of either the four-year college or high school; i.e., their academic missions were associated with higher education legislation and their vocational missions with secondary vocational education. In many respects two-year colleges for many years were really nonessential institutions because their vocational education and adult training were available in—and until the 1980s remarkably similar to—programs in the secondary schools, and transfer programs were similar to the first two years of four-year programs in four-year colleges and universities. This is not to underestimate their considerable democratizing value, which provided access to educational opportunities for many segments of the population unable to qualify (or pay) for the more prestigious schools or acquire the skills they needed in high school. As demand for postsecondary education has grown, community colleges have become even more recognized for their open enrollment policies and gateways to higher education.

In the 1960s the vocational programs of community colleges expanded in response to the growing demands of industry for workers and the threat of automation. Yet, as recently as the 1981 Vocational Education Study, postsecondary vocational programs at community colleges were often found to be near-duplicates of those offered in secondary schools. Programs such as secretarial, welding, and auto mechanics consistently had the highest enrollments. Adult postsecondary vocational education, which accounted for the vast majority of the full-time equivalent enrollments (FTE), and customized training for industry occurred mainly in the area vocational centers of secondary systems.

This emphasis on vocational education during the years of compulsory schooling happened despite the recommendations of many national commissions. The nation's first full-scale national assessment of vocational education (1936–39) stated that “The needs of the economic order

clearly point to the junior college period as the time when a relatively large amount of vocational education should be given.”<sup>1</sup> Although the federal legislation limited funding for college programs, vocational education, the Commission said, was a more important role for junior colleges than simply replicating the first two years of four-year schools. The Panel of Consultants that was appointed by President Kennedy in 1961 to study vocational education agreed, but took a dimmer view of college-level work, despite its attention to rising levels of automation and skill requirements. The Panel stated that the term in the federal legislation “less than college grade” meant not just below college level but courses that do not require college entrance requirements. While opening access it lowered standards and may have led to duplication of effort between secondary and postsecondary programs.

The 1963 Vocational Education Act was the first to target “persons who have completed or left high school and who are available for full-time study in preparation for entering the labor market,” although the funding set aside was combined with construction of area vocational education school facilities and could be used for either. But the Act’s declaration of purpose was to assist students in high school—those “who have completed or discontinued their formal education and are preparing to enter the labor market...” and those needing skill upgrading. This, of course, was largely because prior to the mid-sixties most two-year colleges were in fact junior colleges whose aim was to transfer students to four-year colleges. Vocational programs were of lesser importance and received fewer resources.

In 1968, a report of the Advisory Council on Vocational Education found that postsecondary schools took an early stand on linking academic and vocational programs, stating “There is no longer any room for any dichotomy between intellectual competence and manipulative skills and, therefore, between academic and vocational education.”<sup>2</sup> The report also recommended moving towards a “unified system of vocational education” where occupational preparation begins in elementary schools, continues through economic orientation and occupational preparation in junior high school, to more specific occupational preparation in the high school (but not limited to a specific occupation), and eventually to universal formal postsecondary occupational preparation. Further, preparation should not be limited to the classroom, students with special needs should get special help, students at rural schools with inadequate programs should be able to use residential facilities, and data should be available “to eliminate undesirable duplication.”<sup>3</sup>

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<sup>1</sup>Edward Krug, *The Shaping of the American High School, Volume 2, 1920–1941* (Madison, WI: University of Wisconsin Press, 1972), 196.

<sup>2</sup>U.S. Congress, Subcommittee on Education of the Committee on Labor and Public Welfare, *Notes and Working Papers Concerning the Administration of Programs Authorized Under Vocational Education Act of 1963 Public Law 88-210, as Amended: The Bridge Between Man and His Work* (Washington, DC: Government Printing Office, March 1968).

<sup>3</sup>*Ibid.*, 173.

The vocational education studies and assessments completed in 1981, 1989, and 1994 all treated postsecondary vocational education primarily as more advanced versions of secondary programs and minimized the differences. None of the planning papers in the 1981 study or design papers for the 1989 assessment specifically addressed postsecondary issues and secondary issues have appeared to drive the data collection. The one study that did focus on postsecondary in 1989 was a survey of employers to compare factors that influenced quality of manufacturing and accounting programs in both public and proprietary postsecondary institutions.<sup>4</sup>

### **III. Distinguishing Marks**

The term “postsecondary schools” appeared in federal vocational education legislation for the first time in the 1968 Amendments, which set aside 25 percent of the total basic grants to states for postsecondary institutions. This was the first vocational education funding specifically earmarked for two-year colleges. Despite the set-aside, federal vocational education legislation, even after decades of adjustments to markets, populations, and technologies, has never systematically taken into account the fundamental differences between secondary and postsecondary vocational education (PSVE). Even the judgment of whether PSVE should be considered an extension of K–12 or a track towards higher education is still an open question. When community colleges were still primarily junior colleges oriented towards transfer programs, area vocational centers assumed much of the responsibility for postsecondary adult education and for contract and customized training, and were the “institutions of choice” among most employers.

Current arguments for a universal K–14 education imply that that the associate’s degree is merely an extension rather than entrance into a new type of education. I would argue that today the occupational programs offered by community colleges, and the environments in which they are offered, are not extensions of high schools but are more akin to universities, and today the differences between the compulsory and post-compulsory vocational and technical education are much greater than their similarities. Therefore, policies established for high schools are not automatically transferable to community colleges. The vocational and technical education at community colleges (i.e., associate’s degree, certificate, credit and noncredit courses and training) differ from those in secondary vocational education in the following ways.

#### ***Community colleges serve a much broader range of student populations***

Students enrolled in community college vocational programs range from youth just out of high school to senior citizens, from women with no work experience to laid-off machinists or en-

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<sup>4</sup>Rocco Pietro et al., *Postsecondary Vocational Education in a Technological Economy: Defining the Quality of Programs*. (Ann Arbor: Industrial Technology Institute, January 1989).

gineers with decades of experience, from high school dropouts to adults holding Ph.D.s. Some vocationally oriented registrants are pursuing degrees, others want shorter term certificates, some are enrolled to acquire very specific skills or to explore occupations through selected courses, and others are not yet sure of their intentions. Adelman's analysis of *High School and Beyond* data highlights the problem of trying to measure retention among community college students because of the frequency of interruptions, changes in plans, and transfers among institutions between the time of initial enrollment and completion or final leaving. Almost three in eight students are over 30 years of age and one in eight is over 40 years<sup>5</sup> (though 70 percent of federal funds are distributed according to populations of age 24 or less), about 63 percent attend part time, about half of all students work full time (including 30 percent of all full-time students), and many have family responsibilities. Dropping out of a community college temporarily may be a necessity, and dropping out early to take a better job may be a very rational economic decision, particularly in tight labor markets and for employment in a company with strong internal education programs. One of the recent high-growth student populations is the "reverse transfer"—people who already have completed a four-year college program but who may want to acquire particular skills or change careers. Estimated to be 7 percent of total enrollments, some programs report much higher rates. A water-testing program at St. Cloud Technical College in Minnesota, and advanced manufacturing technology programs at De Anza Community College in California, and a law enforcement program at Palm Beach Community College in Florida all report that more than one in four students pursuing an associate's degree already have a bachelor's degree.

***Community colleges have a different relationship to their local economies and thus different customers and missions***

The high school is a creation of the state operated *en loco parentis* and remains part and parcel of the state's educational system. Public educational institutions have always been locally governed but, since the days of Horace Mann and the first state aid, they have been legitimated, measured, regulated, and given standards to meet by the state. Despite efforts of schools, particularly in rural areas, to make the curriculum locally relevant, the primary responsibility of secondary education is to the student, not the community. Community colleges, however, have much stronger regional ties and are more able to specialize to target local needs—hence the title "community" college. High schools are part of the economic *infrastructure*, while community colleges are themselves an economic *resource* and embedded within regional economic systems. Therefore, community colleges have been able to expand their functions and services in ways which

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<sup>5</sup>Thomas J. Kane and Cecelia Elena Rouse, "The Community College: Educating Students at the Margin Between College and Work," *Journal of Economic Perspectives* 13 (Winter 1999): 63–84.

complement, supplement, and enhance their core education and training mission. Multiple “customers” suggest different measures of success for various goals, as shown in Table 1.

**Table 1**  
**Responsibilities and Goals of Community Colleges**

<b>Unit</b>	<b>Form</b>	<b>Economic Goals</b>	<b>Educational Goals</b>	<b>Equity Goals</b>
Student	individual	Increased personal income, improved career opportunities	Acquired skills, competencies, and credentials	Access to jobs and career paths
Employer	corporate	Increased productivity and profits	Learning enterprise, more skilled work force	Fairer hiring and advancement policies
Region	collective	Increased per capita income and more jobs	Tacit knowledge transfer, learning society	Distributed wealth and reduced poverty

***Community colleges operate in a different competitive environment***

Although there is some competition for public schools, very little of it applies to vocational education. Most private schools, even where vouchers are being used, concentrate on the basics and generally do not offer any significant selection of—if any at all—vocational programs. Community colleges, however, face a major challenge in rapidly growing competition from proprietary schools, for-profit and corporate universities, and distance-learning companies as well as from each other. In California’s Silicon Valley, for example, eleven different institutions offer prebaccalaureate education in electronics, nine different agencies or institutions offer programs in computer management information systems, and five teach computer repair.<sup>6</sup> Private colleges, which do not have to worry about offering a broad range of programs and can be selective, are capturing increasingly large niches in work-related education. The University of Phoenix, De Vry Institute of Technology, and corporate universities like ITT, Motorola, Disney, Ford, and Saturn offer some of what community colleges offer, but more efficiently because they are able to focus their resources more narrowly and build expertise. The rapid growth of private companies is driving more and more community colleges towards increasing their short-term and certificate programs such as those offered by Microsoft and Cisco.<sup>7</sup> Some competition may prove valuable by spurring innovation and improvement. The competitive position of technical colleges is a function of gov-

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<sup>6</sup>Stuart Rosenfeld, *Cluster/Community College Connections*, For the Community College Research Center, Teachers College, January 1999.

<sup>7</sup>Tony Zeis, “Will Our Students Become Theirs?” *Community College Journal* (June/July 1998): 8–13.

ernment policy and regulation that determine scope of authority and institutional culture; but ultimately it is a function of entrepreneurial spirit, competency, and marketing.

### ***Community college programs, curricula, and enrollments are driven by different forces***

High school vocational curricula, despite mandated industry advisory councils, are primarily driven by state regulations and graduation requirements, strategies to use vocational programs to teach academics, national and state achievement tests, and college entrance requirements. Community college vocational curricula can be shaped more directly by employer needs, industry skill standards, and economic development plans and strategies. In some more regulated industries, that means a degree or certificate that signifies the successful completion of a structured sequence of courses. In other industries it may mean completing a certain number of courses to provide the grounding for subsequent in-plant education and training. Therefore, whereas all high school students aspire to a diploma, community college students, depending on employment needs and their own interests, may enroll to work towards an associate's degree, a certificate of completion, or merely to acquire selected competencies. "Nearly one in six [community college students] never even earns a semester's worth of credits," a number undoubtedly far higher if limited to the vocational population. Academic credit may not be an issue, if the set of courses taken meet industry and local employers' standards and needs. For example, becoming a Microsoft Certified Systems engineer may be more valuable to some employers than an associate of science degree.

### ***Community colleges serve different customers***

High schools exist to serve individuals. Even though some offer industry training, as public schools the customer is ultimately the individual. Community colleges are able to assign businesses a higher priority and reach individuals collectively through their employers as well as directly. This affects the nature of relationships between businesses and schools. While there may be good reason to keep business interests at arm's length from core education in order to retain its primary civic and open character, there is equally good reason for community colleges to form strong partnerships with industry in vocationally oriented education. The fact that community colleges have economic development missions often results in partnerships that go beyond advisory committees or equipment donations. This leads to an assortment of services that, if used effectively, enhance education. For example, new business incubators can provide internships for students and experience for faculty, technical assistance programs can give faculty first-hand knowledge of new technologies and changing skill requirements, and technology demonstration sites can increase the demand for skills, workers, and training among local employers and give students exposure to advanced technologies.

***Community colleges exhibit greater variations among states and within states than do high schools***

While secondary programs might be offered through comprehensive high schools, area vocational centers, vocational high schools, or career academies, they are all operated within school districts that comprise state systems that are quite similar to one another. Community college systems, however, vary significantly from state to state. They may: be independent systems, e.g., Mississippi, North Carolina, and California; be part of their State Departments of Education, e.g., Iowa and Michigan; operate as part of a state university, e.g., New York, Tennessee, and North Dakota; be under a state higher education system, e.g., Florida, Utah, and West Virginia; be single state entities, some with branch campuses, e.g., Indiana, Rhode Island, and Delaware; be a mix of university-based branches and independent colleges, e.g., Oklahoma and Arkansas; be under a joint secondary/postsecondary board, e.g., Wisconsin and Colorado; or, be split between two agencies, as in Georgia. Colleges also vary within states, with some colleges concentrating more on workforce development and others focusing on transfer, some with large industry programs and others with virtually none. And scale differs dramatically with states—even more dramatically than high schools. Milwaukee, Dade County, and Phoenix have multicampus institutions with larger enrollments than their state universities while some of tribal colleges in Montana have only a small number of students.

***Community colleges are freer to respond to changing economies and labor markets***

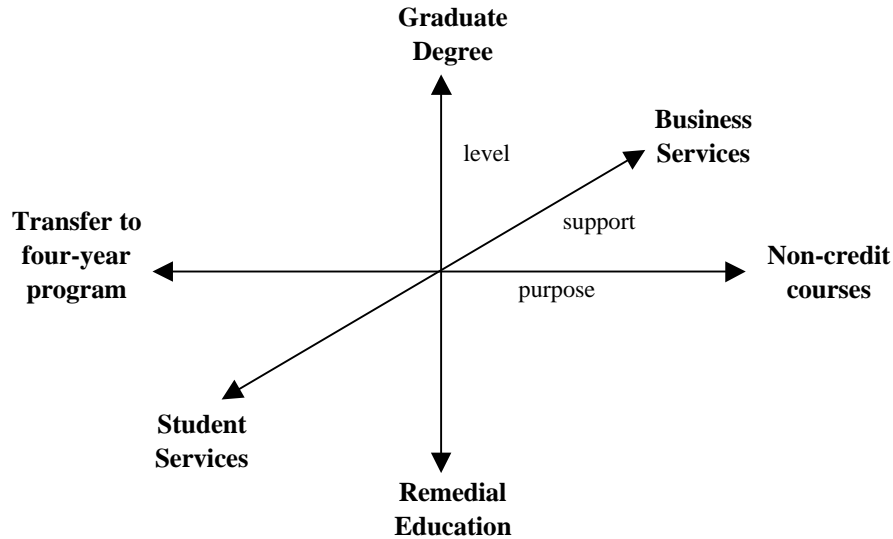
Community colleges, being younger than other educational institutions, have fewer traditions and a less rigid organizational structure. Faculty are less regulated, freer to participate in commercial activities, and more likely to have industrial experience and maintain industry contacts or to be industrial employees who teach only part-time. New programs can be introduced more easily and quickly and customized to local technical skill needs. Community college programs, which are less regulated by state regulations and influenced by national tests and graduation requirements, are better able to work with industry in curriculum development and design.



**Table 2**  
**Comparisons between Secondary and Postsecondary Vocational Education**

<b>Factor</b>	<b>Secondary</b>	<b>Postsecondary</b>
Population	youth	adults
Attendance	compulsory	voluntary
Status	full-time	mostly part-time
Individual goal	diploma	degree, certificate, or competencies
Responsibility	state ( <i>in loco parentis</i> )	region
Faculty	mostly certified teachers	mainly part time faculty
Primary funding	local, state taxes by ADA	tax base by FTE, tuition, fees
Curricula	set by state	dictated by demand
Competitors	private schools	proprietary, corporate schools
Customer	student	student, company, region
Emerging need	academic though vocational	problem solving, analytical skills

**Figure 1**  
**Range of Functions of Community Colleges**



#### **IV. From the Supply to Demand Side of the Picture**

For many reasons—mostly driven by increasing skill requirements within the economy—two-year colleges, over the past two decades, appear to have become the institutions of choice among employers, many of whom have expressed dissatisfaction with the nation’s secondary schools. These changes began amid some controversy since many still believed that the trend toward vocational curriculum and greater involvement of industry threatened the historical democratic purpose of the institutions.<sup>8</sup> But by the mid-1980s, the accelerated modernization of industry, which required higher levels of technology and increased responsibility from the work force, became the impetus for two-year colleges to delve more deeply into economic development. The value of vocational education to local economic development had been accepted for some time among economists. By the 1960s colleges began adding technical associate degree programs at a rapid pace.

By the 1980s, most states either had added or increased in priority their economic development missions. Whereas employment had always been a goal of vocational education, a new perception was emerging that community colleges were not only suppliers of skilled labor, but also

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<sup>8</sup>Steven Brill and Jerome Karabel, *The Diverted Dream: Community Colleges and the Promise of Educational Opportunity in America, 1900–1985* (New York: Oxford University Press, 1989).

could influence the actions on the demand side, or the employer and workplace. This actually began at the federal level in the early 1960s when the Area Redevelopment Act of 1961 authorized \$10 million in federal funds to train workers for the specific needs of an employer and helped legitimate vocational education as an industrial recruitment tool, at least for depressed regions. In 1965, the Appalachian Regional Development Act and Public Works and Economic Development Act allocated substantial funds to area vocational centers, technical institutes, and work force development. Some states, like North and South Carolina, had a system of postsecondary technical institutes to support the recruitment of industry in the 1960s. By the 1970s, customized training for new and expanding industries had become a common part of state incentives for industrial recruitment. Nearly every state established such a program under vocational education—mostly as part of secondary vocational education and generally at area vocational centers (but through community or technical colleges in a few states). In 1980, a grant from the U.S. Department of Education to the American Vocational Association of vocational education and economic development resulted in 17 case studies that described these linkages in some detail.<sup>9</sup>

Yet despite the attention to customized training, it remained a peripheral function of educational institutions, not part of their core missions. Economic development was not allowed to be included among possible goals at the time the 1981 *Vocational Education Study* was released. Nevertheless, by the time the Carl Perkins Vocational Education Act of 1984 was drafted, economic development gained the legitimacy it sought and was mentioned in the legislation’s “Purpose.” Administrators were encouraged to design programs to encourage new business growth, prepare the work force for technological change, assist the revitalization of existing industry, and facilitate the reemployment of people displaced by technology.<sup>10</sup> The impetus was the parallel crises in American manufacturing brought about by global competition and advancing technology and in American education, as described by *A Nation at Risk* and a flurry of similar reports. The result was to place more responsibility on high schools (and by inference, classroom time) for basic skills and on postsecondary vocational education for the more advanced technical skills. In a sense, technology had caused industry to outgrow the area vocational centers and their needs to expand beyond well beyond customized and contract training.

A 1986 survey of presidents of 103 community colleges in Appalachia found that 84 percent already solved technical problems for local businesses, 65 percent had partnerships to diffuse technology, 62 percent believed that a clearly defined role in technology diffusion is essential, 55

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<sup>9</sup>Krishan Paul, Ellen Carlos, and David Bushnell, *Vocational Education and Economic Development: Case Studies* (Washington, DC: American Vocational Association, January 1982).

<sup>10</sup>Patricia M. Flynn, “Vocational Education Policy and Economic Development: Balancing Short-term and Long-term Needs,” National Assessment of Vocational Education, *Design Papers for the National Assessment of Vocational Education*. (Washington, DC: Government Printing Office, 1987).

percent believed that a dedicated office or center is essential.<sup>11</sup> In 1987, the American Association of Community Colleges and Tennessee Valley Authority teamed up to hold a National Roundtable on Economic Development to examine and recommend the colleges as “key partners in economic development.”<sup>12</sup> Three nationwide surveys (1989, 1992, and 1994) found that 90 percent of community colleges offer contract training.<sup>13</sup>

An increasing number of regional, state, and local plans began to make this goal explicit. A 1989 Report of the Commission on the Future of the North Carolina Community College system identified as one of six strategic challenges to “help business and industry adapt to technological change and promote small business development throughout the state.”<sup>14</sup> A 1992 report on Southern Workforce Development recommended “that states place a high priority on their historically underfunded and undervalued technical and community colleges and place them at the center of the new workforce development system.”<sup>15</sup> A 1993 report of the Mississippi Community College Foundation called for changing the statutory mission to strengthen work force development “commensurate with economic development needs” and to establish industrial extension at the colleges to promote technology transfer.<sup>16</sup> That same year a strategic plan developed by Oklahoma State University’s technical college at Okmulgee named as its number one goal “to expand the institution’s role in Oklahoma’s economic development.” Objectives included fostering “program development on advancing technologies in value-added industries that require and reward technicians and professionals”; expanding “continuing and customized education, contract training, technology deployment-demonstration-assistance and utilization,” such as “networks of small- to medium-sized firms to facilitate technology modernization”; and establishing “on-going relationships with private and public agencies engaged in economic development.”<sup>17</sup>

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<sup>11</sup>Louis Blair, *Strategies and Approaches for Appalachian Higher Education Institutions to Diffuse Technology for Regional Economic Development* (Washington, DC: Appalachian Regional Commission, 1986).

<sup>12</sup>Technical and Community Colleges: Catalysts for Technology Development, in *The Role of Community, Technical, and Junior Colleges in Technical Education/Training and Economic Development* (Washington DC: American Association of Community and Junior Colleges, 1987).

<sup>13</sup>Kevin J. Dougherty and Marianne F. Bakia, *Community Colleges and Contract Education: Content, Origins, and Impacts* (paper for the Community College Research Center, Teachers College, January 1999).

<sup>14</sup>Commission on the Future of the North Carolina Community College System, *Gaining the Competitive Edge: The Challenge to North Carolina’s Community College System* (Raleigh, NC: MDC. Inc, 1989).

<sup>15</sup>Advisory Panel on Southern Workforce Development, *Greater Expectations: The South’s Workforce is the South’s Future*. (Chapel Hill: MDC, Inc., September 1992).

<sup>16</sup>The Millennium Group. *Building a New Workforce for a New Century* (Jackson: Mississippi Community College Foundation, November 1993).

<sup>17</sup>*Passage to the Emerging Frontier: A Strategic Plan* (Okmulgee: Oklahoma State University Technical Branch, 1993).

**Table 3**  
**Categories of Activities at Technical Colleges**

<p><b>Education:</b> <b>Gateway to the workplace</b></p>	<ul style="list-style-type: none"> <li>• Rigor, articulated with higher education</li> <li>• Comprehensive programs</li> <li>• Working with industry</li> <li>• Targeting Clusters</li> <li>• Educating disadvantaged youth</li> <li>• Effective recruitment</li> </ul>
<p><b>Upgrading skills and retraining:</b> <b>Adapting to technology</b></p>	<ul style="list-style-type: none"> <li>• Customized and contract education</li> <li>• Forming training networks</li> <li>• Using distance learning</li> <li>• Teaching soft technologies/skills</li> <li>• Educating managers</li> <li>• Training displaced workers</li> </ul>
<p><b>Technology Intermediaries:</b> <b>Accelerating deployment</b></p>	<ul style="list-style-type: none"> <li>• Technology centers / teaching factories</li> <li>• Technical assistance</li> <li>• Industry sector hubs</li> <li>• Host for technology services</li> <li>• New business incubators</li> </ul>
<p><b>Fomenting strategic alliances:</b> <b>Learning companies and learning communities</b></p>	<ul style="list-style-type: none"> <li>• Forming alliances with industry</li> <li>• Consortia with other colleges</li> <li>• Cooperating with development agencies</li> <li>• Facilitating intra-firm learning</li> </ul>

As the nation’s Manufacturing Extension Partnership (MEP) was built in the early 1990s, community colleges became leading partners, and in some places lead organizations—a pattern unanticipated when the policy was first authorized in the Omnibus Trade & Competitiveness Act of 1988 and suggested in a strategic plan for the southern states that year as a recommendation to “expand missions of selected community and technical colleges to deploy manufacturing technology to small enterprises.”<sup>18</sup> As a result, the National Institute for Standards and Technology has formalized relationships with community colleges and the community colleges comprise one of the largest membership segments of the National Coalition for Advanced Manufacturing (NACFAM). By 1995, 90 percent of respondents to a survey of 100 community colleges referenced economic

<sup>18</sup>Southern Technology Council, *Turning to Technology: A Strategic Plan for the Nineties*. (Research Triangle Park, NC: Southern Growth Policies Board, 1989).

development or modernization services in their mission statement.<sup>19</sup> Even colleges that have chosen to remain truer to a more narrowly defined education and training mission are paying more attention to skill upgrading and strengthening their connections to business and industry and accelerating their responses to its technological and workplace demands. A study for the Ford Foundation in 1995 identified eight classes of functions at community colleges that directly supported economic development, shown in Table 2.<sup>20</sup>

What a specific college actually offers depends on the scope of its mission, the range of its mandate and authority, access to resources, and availability of alternative services. Colleges in areas rich in technological resources are more likely to limit their services to selected niches where they are most competitive. Conversely, colleges in areas with few technological resources assume greater roles and offer more services.

In the 1990s, based on expanding interest among states (and many nations) in the work of Michael Porter<sup>21</sup> and others arguing that industry clusters<sup>22</sup> are the most appropriate unit of economic analysis and policy, colleges have begun to more formally relate their programs and services to clusters. This new economic development strategy is driving higher education policies in Alabama, New York, and Minnesota, for example, even more towards more economic development in the form of specialized, cluster-related programs and centers at community colleges.<sup>23</sup> Though a natural in regions where colleges are already responsive to local industry demands, the concept of economy-driven specialization appears to be contrary to the notion of the comprehensive, student-centered community college.

Many educators and policymakers still contend that expanded missions undermine the social goals of community colleges and that a clear focus on education is essential to achieving excellence.<sup>24</sup> But expansion can be defined horizontally, increasing the scale of programs, or vertically, expanding the scope of programs, a distinction rarely made. Whether mission creep adds or subtracts value to the educational process depends largely on how it is integrated. A clear institutional focus on a set of industries or occupations, for example, may actually be enhanced by

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<sup>19</sup>Stuart Rosenfeld, *New Technologies and New Skills: Two-Year Colleges at the Vanguard of Modernization* (Washington, DC: Community College Press, 1995).

<sup>20</sup>Ibid.

<sup>21</sup>Michael Porter, *The Competitive Advantage of Nations* (New York: Free Press, 1990).

<sup>22</sup>Geographically bounded agglomerations of similar and/or complementary and interdependent businesses that operate as a system and produce synergy.

<sup>23</sup>As evidenced in the cluster-specific structure of the Alabama Technology Network at Alabama community colleges, the current RTS research in New York for Empire State Development Corporation on community colleges' support of regionally designated clusters, and Hubert H. Humphrey Institute, *The Education Industry Report* (Minneapolis: University of Minnesota, September 1998).

<sup>24</sup>Thomas Bailey, "Expanding Roles in Economic Development" (paper prepared for Learning.Now symposium, Chapel Hill, NC, December 13–14, 1998).

actively using the expertise developed and experience gained by faculty and students in the larger set of related functions and industry connections to improve the education and expand learning opportunities.

## **V. Research Questions for Community Colleges**

There are a number of ways to organize a research strategy, including around inputs, process, and outcomes, elements of federal legislation, and levels of education. But because I believe that community colleges, perhaps more than any other educational institution, are demand driven, I have chosen as an organizing framework three different demand-based loci of activity, interest, and responsibility:

individuals (youth and adults),  
organizations (institutions and enterprises), and  
systems (economic and educational).

These are addressed through various studies that will be outlined in Section V.

### ***1. Individuals***

Most of the conclusions drawn about vocational programs in community colleges are based on incomplete information about the goals of those enrolled, based largely on transcript data and number of credits earned in total and/or in discipline. But the value of the program of study to an individual in terms of employment and growth potential and to the labor market is highly dependent on an individual's field of study, previous experience, labor market conditions, and the employer's internal training plans. A licensed profession such as nursing generally requires graduation, but a technical occupation in information technologies may require a set of specific competencies. A student looking for employment with a large employer in a tight labor market—especially if a head of household—may rationally choose to complete his/her education and training within the company. In 1994, the NAVE report termed this a “problem.” But perhaps a short-term enrollment is in the best interest of the individual. Given what is now known about the value of informal learning, if the individual is employed in a “learning company,” under what conditions is more time in a public institution the better choice? A complete assessment of program outcomes should take into account the entry requirements of the industry, the local economy, and the experience and status—and especially the goals—of the individual.

*Why do individuals enroll in the nontransfer programs of community colleges and what are the appropriate outcome measures for various goals?*

This is a crucial consideration in the establishment of policies for allocating resources based on outcomes. Surveys indicate that outside of licensed occupations like nursing or electricians, few positions recognize or require Associate's Degrees or Certificates.<sup>25</sup> If labor markets do not adequately reward completion of a one- or two-year degree—and there is substantial evidence that they do not in all but licensed occupations—then leaving for employment (and potentially job-related education and training) may be the best economic decision and “program” completion may be an inappropriate measure of success. There should be a way to separate students who make rational decisions to enroll to achieve some market-driven ends and those who enroll to simply explore and test possibilities. For example, a student only “milling around” who ultimately chooses and pursues a career path based on the college experience, might be termed a success regardless of whether it results to completion at that institution. Information that relates student outcomes with labor market demands and requirements and to personal goals and ambitions would provide a more accurate picture of the success of the program.

*Who enrolls in the nontransfer programs of community colleges and how do individuals' traits affect outcome measures?*

Understanding the needs of the students is essential to formulating federal policies. Most evidence shows that community college vocational students on average are older (late twenties), have much more variability in previous educational attainment (from high school dropout to Ph.D.), and more likely to be working (two thirds with half working full time) than their counterparts in transfer programs or in universities, most of whom enroll immediately after high school. Little is known about the nature of new enrollment patterns, particularly those resulting from economic changes that attract educated people back to acquire technology-related competencies for career shifts, immigrants to meet skill shortages, and the incumbent work force to upgrade their skills.

*Who chooses to continue with further formal education and under what conditions?*

One of the criticisms of much of associate of science vocational education is that the courses are not transferable to four-year institutions. Few colleges of engineering at state universities are willing to accept for credit the technical courses in most Associate of Science degree programs. Some blame the research universities for refusing to accept applied sciences but the universities

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<sup>25</sup>Clifford Adelman, *The Way We Are: The Community College as Thermometer* (Washington, DC: U.S. Department of Education/OERI, 1992) and W. Norton Grubb, *Working in the Middle* (San Francisco: Jossey-Bass, 1996).



say that the students lack the conceptual skills, particularly in math, to meet graduation requirements. Many community college courses are accepted by other less technical programs at universities or by more applied engineering schools. For example, Mississippi State University School of Education accepts the A.S. degree from Itawamba Community College towards a B.S. but the School of Engineering does not. Are there ways to keep the door open to further education, as Denmark does with its three-year HTX and HHX programs at technical colleges (also common at polytechnics in other European countries), and would that increase the status and respectability of two-year degrees among students? How do community colleges address transfer of credits for vocational programs?

*How important is student aid and to whom?*

Financial aid is a large part of federal support of higher education and allows many people to attend who might not otherwise have the means. Yet, a recent study at a large urban community college in Florida with a large low-income student body revealed that only a small proportion (13 percent) were receiving Pell grants.<sup>26</sup> Nationally, only 15 percent of all students receive any federal grants and 6 percent get federal loans. Who receives student grants or loans, which program enrollments, student groups, and institutions are most influenced by it, and what barriers exist to applying for it?

*How do students connect to and learn about labor markets and job opportunities?*

Surveys of where employers find new employees indicate that the most new hires are the result of advertisements or referrals. Few companies rate community colleges or high schools very high as sources. In fact, most regions still lack the type of coherent labor market system envisioned in the Workforce Investment Act.<sup>27</sup> This suggests weak formal labor market connections at community colleges (and high schools). How, then, do students find employment? Does the college have a formal placement office and how does it operate? Are government supported employment systems effective? Do students have access to informal labor market networks, such as through faculty, friends, or family, and do the colleges enhance those systems? Or, do they now simply rely on ads and the Internet?

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<sup>26</sup>John Foster-Bey, Paul Pryde, and Stuart Rosenfeld, *Linking Low-Income People to Economic Opportunity in Palm Beach County* (report to the Community Foundation for Palm Beach and Martin Counties and the MacArthur Foundation, April 1999).

<sup>27</sup>Workforce Development Program, *Building a Highly Skilled Workforce: A Labor Market System for the 21st Century* (Washington, DC National Center on Education and the Economy, 1997).

*What support services are most likely to influence enrollment, retention, and success?*

Some local studies of college enrollment and retention suggests that lack of support or infrastructure, such as day care and transportation, prevents attendance and that certain services, including counseling, work-study programs, and assistance with finding and applying for various forms of aid. To what extent do students take advantage of support services and which ones appear to be most effective? Where and how are colleges assuming leadership in Workforce Investment Act one-stop-career centers and how do they serve community college students?

## **2. Organizations**

Since community colleges are part and parcel of their regional economic systems, relationships to other organizations have a major effect on their performance and impacts. Colleges must be responsible to their state governing agencies and boards of trustees, and at the same time be responsive to their customers (individuals and enterprises), labor markets, competitors, and economic forces. Institutional leadership and governance, partnerships, and innovation often determine the effectiveness of community colleges in their regions. In particular, the ways in which colleges relate to local employers can reveal a great deal about the quality and impact of their programs. Better information about these factors would help understand what can be done to strengthen them.

*What are the most successful and cost-effective means for addressing basic education and skill deficiencies?*

Most students entering community colleges lack the basic skills to perform at the college level and require some additional academic preparation. The High School and Beyond data show that more than three of four students who eventually earn an associate's degree took some remedial courses, and one on four took at least three.<sup>28</sup> Texas spends more than \$170 million a year on courses for remediation. Since the community colleges have provided open access without the entrance requirements that four-year colleges and universities impose and high schools fail to meet, much of the burden now falls on the community colleges. How effective is remediation in improving both academic and labor market outcomes?

*What are the effects of “academic and mission drift?”*

Just as the status and image of jobs is pushing student demand towards white-collar careers, image and status is pulling colleges toward baccalaureate level degrees—albeit more applied than

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<sup>28</sup>Cliff Adelman, from *High School and Beyond* transcripts, for American Association of Community Colleges, April 28, 1998.

those offered in universities—and towards taking on more of the trappings of universities, such as research and development centers. This “academic drift” is evident in the recent plans of two-year colleges to become four-year colleges, such as plans of the two-year colleges Briarcliff on Long Island, New York, and Suomi in Michigan to become four-year colleges. The same trend was the cause of Ireland’s Regional Technical Colleges becoming Institutes of Technology last year and some of New Zealand’s polytechnics becoming universities. This trend appears somewhat illogical in light of business surveys that express demands for more mid-skilled workers. At the same time, many vocational education advocates, in efforts to attract more funding, are calling for a “K–14” system” that assumes two additional years are required for good jobs. This could have the opposite effect, reducing the status of postsecondary vocational education by turning it into an extension of high school. How widespread is mission drift, what motivates it and to what extent is this trend changing the nature and needs of postsecondary vocational education?

*Who are the competitors, what are their niches, and how and when should community colleges respond?*

Community colleges, in part because they target the incumbent workforce and businesses, find themselves in competition with a growing private-sector educational establishment. Although the colleges often have the advantage of lower costs, the private sector may be more effective at marketing, more selective, and better able to target high-demand occupations and employer key competencies. Who are the competitors, what are their comparative advantages, and how do their outcomes compare to public institutions? In what areas should community colleges compete, where should they concede, and where should they partner? Does competition serve to enhance or diminish the quality of community college programs? The competition includes for profits like the University of Phoenix, corporate colleges like Motorola and Ford, and the fast-growing Internet-based programs, like England’s University for Industry. How does the competition affect the decisions of education and training intermediaries like the U.S. Manufacturing Extension Partnership, which now derives a large proportion of its revenue from education and training, or the Workforce Development Boards?

*How are federal funds used by community colleges?*

This is a straightforward analysis of how the federal funds are used with community colleges and the extent to which they can be traced to meeting special needs, stimulating new investment, improvement, or innovation, and leveraging other resources. Getting the information, however, may not be straightforward. The federal vocational funds that are distributed to community colleges are likely to be much smaller portions of their respective budgets than in secondary school.

They are also likely to be used in a greater variety of ways and, therefore, more difficult to isolate. Trying to detect the impact of those funds will be even more difficult.

*How do firms view, value, and use colleges?*

The labor market outcomes of a vocational education program often depend on its reputation in and perceived value to the business community. Some studies and surveys have suggested that community colleges have not been highly regarded by many employers as sources of training or entry level employees. The added economic value of an associate's degree, according to a recent government report, is far less than the added value of a bachelor's degree and only marginally better than some time in college without the bachelor's degree.<sup>29</sup> What differentiates those programs and colleges that are highly regarded from those that are not?

*What are the most innovative and effective practices for preparing students for employment in high-performance workplaces?*

Some colleges have been particularly innovative in designing programs of study to produce the analytical and interpersonal skills that employers say they want. For example, some colleges effectively mix theory with practice and academic with vocational education and others use systemic approaches that introduce "all aspects of the industry." It would be quite useful to learn how and why these programs came to be and how factors such as institutional leadership, faculty interest, government funding, employer demand, and imitation influenced implementation and how innovation (technological, pedagogical) is supported and rewarded.

### **3. Systems**

Community colleges are not independent institutions or part of a state educational enterprise. They are interdependent elements of a variety of regional social and economic systems and their actions have repercussions throughout the system. Yet they are rarely assessed with respect to impacts on those systems, which would include not only the collective competencies and credentials produced for the labor market, but also the expertise, technology, and access to information they bring to the system. As part of a system, community colleges are subject to external forces and subject to external conditions, and the functions they perform are shaped in part by those conditions. For example, community colleges in rural areas may be expected to provide different functions than colleges in urban areas with a variety of private services and educational

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<sup>29</sup>*21st Century Skills for 21st Century Jobs*. A Report of the U.S. Department of Commerce, U.S. Department of Education, U.S. Department of Labor, National Institute of Literacy, and the Small Business Administration, January 1999.

institutions. Examining colleges as part of regional economic systems shifts the focus to collective impacts rather than individual outcomes.

*What can be learned from international experiences?*

There is substantial evidence that a major source of innovation in education comes from experiences in other industrialized nations, which then are tailored to national conditions. Congressional discussions of the Smith-Hughes Act cited the Prussian education as an exemplary model and the early community colleges used the gymnasium as their model. More recently, the United Kingdom's training and enterprise Councils were modeled on U.S. Private Industry Councils and U.S. school-to work programs and skill standards strategies relied heavily on experiences in Denmark and Germany. Most other nations have a post-compulsory vocational education system roughly comparable to that in the U.S., i.e., Further Education Colleges in the United Kingdom, Technical Colleges in Denmark, and Regional Technical Colleges in Italy.<sup>30</sup> Some separate credit and noncredit programs between different institutions, some take three years to produce a technically qualified technician or engineer, and many have developed formal problem-solving mechanisms. Therefore, it may prove useful to compare U.S. postsecondary policies to other systems operating in similar economic, if not political, environments.

*How do partnerships affect colleges' quality, cost-effectiveness, and impacts and, in particular, what are the effective and appropriate roles for the private sector?*

This is an important question because of the historical controversy surrounding business relationships and concerns that they would compromise academic freedom and shift resources away from liberal arts toward occupational courses. Federal legislation values advice from business and requires advisory boards. True partnerships, such as Europe's Social Partnerships, are sporadic and generally the result of local influences and leadership. Colleges that recognize their place with regional economic systems also partner with agencies that have related missions, such as the MEP, small business development centers, and business incubators. Such partnerships and alliances with a variety of organizations are now common among community colleges. Colleges have formal alliances among themselves, such as the three-college alliance in western North Carolina, in which programs are shared or the five-college alliance that comprises the Southwestern Virginia Advanced Manufacturing Technology Center. Many community colleges have established partnerships with the National Institute for Standards and Technology's Manufacturing Extension

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<sup>30</sup>See Stuart Rosenfeld, *Technical Colleges, Technology Deployment, and Regional Development* (paper presented at the International Conference on "Building Competitive Economies," Modena, Italy, Organization for Economic Cooperation and Development, May 1998); and James R. Mahoney and Lynn Barnett, eds., *Developing Technicians: Successful International Systems* (Washington, DC: Community College Press, 1998).

Partnership, including as Alabama's, California's, and Wisconsin's community colleges. There is a new and very rapidly growing set of partnerships to offer training and certification for information technology companies such as Cisco and Microsoft. Other colleges have formed linkages with state economic development or technology transfer programs.

*How do local circumstances, especially urban or rural locations and economic conditions, and structure of economy, affect resources needs, quality and mix of programs, and outcomes?*

The programs, missions, and resource requirements of a particular community college are influenced by local circumstances and needs that include the structure of economy, scale (urban or rural), service area constraints, and degree of independence. Publication No. 6 of the Vocational Education Study analyzed rural conditions and argued that the scale, population density, and structure of economy warrant special consideration in policy.<sup>31</sup> A college in a less populated region has both more reason to specialize to take advantage of economies of scale but also greater need to diversify since fewer alternatives for higher education are available. Similarly—but in different ways—conditions in inner cities suggest special considerations. Other than a few minimal set-asides, funds are targeted to individuals', not regions', need.

*Should community colleges simply react to labor market and student demands or should they be proactive and try to influence firms' behaviors and students' choices?*

The "reactive" colleges survey labor market trends and employer needs and then orient programs towards those trends and needs. The "proactive" colleges anticipate demands and needs based on patterns of technological changes and knowledge of current best practices and then acts as systems integrator and modernizer by providing a work force prepared for the future along with help in making improvements. Colleges historically have been reactive, but the new economy is increasingly looking to colleges to be catalysts for improvement within firms. The relationships to enterprises, expertise, and information that are needed to fill this role effectively, if exploited within the college, can also greatly enhance the quality of education and employment opportunities for students.

*In what ways do and should colleges specialize?*

Even as colleges are expanding their missions, some states are considering various forms of specialization to achieve economies of scale. Many community colleges have already concentrated

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<sup>31</sup>Stuart Rosenfeld, "A Portrait of Rural America: Conditions Affecting Vocational Education Policy," *Vocational Education Study Publication No. 6* (Washington, DC: Government Printing Office, April 1981).

resources to establish a specialty, e.g., a chemical processing and pulp and paper center at Alabama Southern Community College, a Hosiery Technology Center at Catawba Valley Community College in North Carolina, a telecommunications center at Springfield Technical Community College in Massachusetts. Other groups of nearby colleges are forming consortia in order to avoid costly duplication and share curricula. Whereas the more conventional way of defining specialization is around occupational clusters, the more useful for local economies and for implementing “all aspects of the industry,” may be around industry clusters. In successful industry clusters, a labor force skilled in and familiar with the local industry base and an educational system to sustain are viewed among the most valuable attributes of a region by businesses.

## **VI. Research Studies**

The premises of institutions with distinctive customers and missions, and relationships to local economies, and the questions they raise leads to a series of studies, which are ordered by judgments of importance to the federal legislation. The first priority is to provide a descriptive picture of the enterprise that can serve as a common framework for classifying colleges, students, and systems in the subsequent research that will try to explain who receives what benefits from the system and how federal policy affects outcomes and impacts. Therefore, step number one is to classify and develop a taxonomy of community college students, institutions, and systems that may compare, for example, organizational and governance structures, missions, priorities, distribution and uses of federal funds, sources of revenues, alliances, distribution of enrollments by age, family status, race and ethnicity, program, organization of noncredit and customized education, concentrations of competitors, and ranges of business and industry services.

Next I will suggest, in line with the organizing theme of individuals, organizations, and regions, a study that focuses on each level. The last is particularly important for expanding the base of support and alliances among other agencies that are affected by community colleges and vocational education, such as the Appalachian Regional Commission, Economic Development Administration, and National Institute for Standards and Technology, and in the private sector.

### ***1. Student Analyses***

Describe the populations of current students and recent leavers and completers and analyze individual outcomes taking into account local labor markets’ and individuals’ goals. This would allow the Congress to appreciate the breadth of its investment and understand its real outcomes.

Survey a national sample of students, recent graduates, and recent school completers and leavers, stratified according to classifications devised earlier, which could be type of state

system, college program, or location to record and analyze student characteristics, sources of financial support, number of remedial courses, basis for selecting their programs of study, goals and expectations, work experiences, special needs, and expected or (in the case of recent completers or leavers) attained outcomes. Most of this information will have to be obtained directly from individuals, and will not be available in school records. Thus, the study will require substantial assistance from the colleges to identify and locate individuals who have left programs. The study should help the Congress understand and appreciate the myriad paths students take and diversity of goals and ambitions.

## ***2. Institutional Surveys***

This research would explain differences in performance, enrollments, and missions among colleges in terms of goals, governance, external conditions, competition, and leadership. Since student outcomes are influenced by the quality and focus of a college's support services, educational programs, and labor market systems, an institutional study would help the Congress better understand how the federal funds influence quality and focus and just what sorts of targeting or direction would have the greatest impacts.

Obtain information, through interviews and/or surveys, from college CEOs and selected trustees in a stratified sample of colleges (e.g., structure of state system and size of institution) to identify and analyze the uses of federal funds, revenue streams and relative sources, missions and priorities, plans and goals, attitudes toward academic versus vocational programs and towards student work experience opportunities, alliances and relationships to other organizations and to industry, internal structure (i.e., administrative framework for "shadow colleges"), and support and means for institutional and faculty learning and innovation.

## ***3. Regional Analysis***

Analyze impacts of colleges within regional economic system by defining the relationships of colleges to the rest of system and the ways colleges affect the growth nomy of the economy and opportunities for various populations. The benefits of this would be (a) to broaden the connection of the legislation to national economic performance and technology development and (build support in other committees concerned with both) and (b) explain the collective and synergistic outcomes of postsecondary vocational education.

This research would be based on case studies that target economic regions as the units of analysis, stratified by type (industry profile), scale, and performance of economy, to describe



how the community college fits into the overall regional economic system; identify areas of specialization and competition; assess ways in which the college responds to regional labor markets and employer demands and equalizes opportunities; examine special strengths; current problems; and estimate impacts on economy and community in terms of employment and business growth and retention and personal income. These studies should place the community college not just within the economic system but look at its programs, enrollments, strengths, and weaknesses in comparison to other public and private sector education and training companies. Part of the assessment process will require obtaining information other agencies and from employers, including small and mid-sized companies and noncustomers of colleges. These studies would be best conducted by regional economists or planners from outside of traditional education research fields, who view education and training as integral elements of economies and have experience in measuring economic impacts.

#### ***4. Additional Studies***

Two other studies would be very useful for both appreciating the value and potential of community colleges and for identifying new and innovative directions for policy.

Conduct international comparative studies to learn how other industrialized nations address issues such as social exclusion, industry demands, skill shortages, and changing youth preferences; effectively use social partnerships, develop skill standards, and implement work experiences; mix theory and practice; and fit into the larger educational establishment. This research is important because the experiences and policies of other programs already shape the thinking of policymakers.<sup>32</sup> For example, national skills standards, school-to-career programs, and notions about workplace based learning are heavily influenced by European practices. Other nations are also facing some of the same challenges as U.S. colleges, such as meeting the employment needs of a rapidly growing information technology fields, changing values of young people, increasing immigration, and academic creep within institutions. But policy transference is limited by the perfunctory examinations and often superficial knowledge gained from brief trips or conferences. Further, very little has focused on the postsecondary level. A more systematic and critical assessment would help policymakers better understand non-U.S. policies and determine which and how lessons from other places

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<sup>32</sup>A very few examples are: Council of State Chief School Officers, *European Lessons from School and the Workplace* (Washington, DC: CCSO, 1991); David Stern, et al., *School-to-Work Policy Insights from Recent International Developments* (Berkeley: National Center for Research in Vocational Education, December 1996); Gene Bottoms, "Lessons from Europe for Improving School-to-Work Programs," *International Forum on Learning and Competitiveness*, March 1996; Glenda Partee, *Youth Work, Youth Development and the Transition from Schooling to Employment in England*, (Washington, DC: American Youth Policy Forum, 1996); and James R. Mahoney and Lynn Barrett, *Developing Technicians: Successful International Programs* (Washington, DC Community College Press, 1998).

can be best used to improve practices and policies in the context of America's political, economic, and social environments. This research would analyze and compare the effectiveness of European systems, selected to represent a range of models, with respect to the various missions of U.S. community colleges to determine whether which impacts are the results of transferable innovations and which are a function of local culture and social structure. This research would require a broad understanding of non-U.S. systems and access to Ministries and selected colleges.

Compile benchmark practices with respect to various congressional and national priorities, looking particularly for innovative practices that improve outcomes for students, local businesses, and local economies, such as innovative melding of academic and vocational courses, especially productive linkages with industry, or successful remediation programs. Most of the candidates can be found through literature searches. Although understanding catalysts and impacts will require further investigation.

## **VII. Potential Research Difficulties**

1. The diversity among state community college systems, and within the systems among institutions, missions, programs, students, and priorities will make it difficult to generalize findings without first developing various taxonomies. The ways that the research classifies and stratifies among these variables will be crucial.

2. It would be extremely difficult, if not impossible, to use "preferred" research designs, where experimental and control groups can be randomly assigned and conditions controlled. Even if such a design could be used, local economies and communities are not environmentally controlled laboratories, and it such a study would very likely not be worth the investment. Therefore, it may not be possible to actually measure independent effects of policies.

3. The low demand among employers for "associate's degrees" undermines the value of program completion, the most common measure of success (and funding) of programs. Therefore, a variety of additional and new outcome measures will be needed, and thus it will be difficult to compare outcomes of current policies to past policies.

4. The low investment in education and training among most U.S. companies may prove a barrier to collecting information from employers, particularly the small- and mid-sized firms. Most employer surveys rely on large companies and low response rates, which biases results towards firms large enough to have human resource development departments. Educational researchers may have to rely on regional agencies and associations that have built relationships with employ-

ers, such as the Manufacturing Extension Partnership, National Association of Manufacturers, and Small Business Development Centers.

5. Since so many community college students are part time, adult, and mobile, it will be difficult to locate recent completers or leavers. The movement in and out and within the system makes tracking much more difficult than in the secondary systems, where record transfer is a requirement. The part-time nature of the student body and the mixing and matching of courses to meet employment requirements will make it difficult to identify consistent courses of study and to track students following completion.

6. The structure and performance of regional economies can have a profound impact on enrollments, revenues, and outcomes. An economy dominated by traditional industries will offer different economic opportunities than one based on high-growth or high-tech industries. Any measure of individual or institutional outcomes, particularly over time, would have to reflect the condition of the local economy.

7. Trying to isolate and measure the impacts of an individual institution and/or college-based intervention on a regional economy, given all of the other external factors that can affect economic outcomes, will prove difficult. Most economic impact studies use fairly gross estimates and try to capture indirect secondary and tertiary effects.