

# **Edging Toward Effectiveness: Examining Postsecondary Occupational Education**

**W. Norton Grubb<sup>1</sup>**  
**University of California, Berkeley**

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In many ways postsecondary occupational education (PSOE) is a stepchild—even a stepchild of a stepchild. The institutions where it takes place—community colleges, technical institutes, some area vocational schools, other public training centers, private proprietary schools—are not well known and are often of low status. In federal policy, these institutions are often afterthoughts: they do not benefit from the large programs (Chapter 1, aid for bilingual and handicapped students) aimed at K–12 schooling; they are not the principal targets of the large amounts of federal funds in postsecondary student aid; and federal aid for vocational education, one of the few federal programs providing funding to both secondary and postsecondary programs, has always been written with secondary education in mind. And within the institution where most PSOE occurs—community colleges—occupational education often suffers again from second-class status relative to academic or transfer education.

But PSOE is more important than its status suggests. It is now the locus of most vocational education, as least vocational education understood as preparation for immediate employment below the baccalaureate level,<sup>2</sup> since vocational education in high schools has either been transformed into more general programs (“education through occupations” or “college and careers”) or has dissipated into random course offerings. The majority of students in community colleges—

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<sup>1</sup>I have been immeasurably helped in preparing this paper by a meeting of the NAVE Independent Advisory Panel on May 6–7, 1999; by a meeting with individuals at the American Association of Community Colleges, especially Jim McKenney, Kent Phillippe, and Margaret Rivera; by the participants’ comments in a meeting held at the April 1999 AACC meetings by Rick Hernandez and Jon Weintraub of the U.S. Department of Education; by meetings with the board of the California Community College Association of Occupational Educators and subsequent discussions with occupational deans in both the San Francisco area and the Los Angeles area; and by discussions with Norena Badway of the Community College Cooperative, NCRVE; Jim Jacobs of Macomb Community College; Richard Fonte of Austin Community College; and David Goodwin and Elizabeth Warner of OUS.

<sup>2</sup>In this paper I won’t get into the federal limitation of vocational education to education below the baccalaureate. This constraint prevents seeing vocational and professional education at the baccalaureate and graduate level as continuous with one another—even though the pedagogical and policy issues are quite similar, and the analysis of vocational (or professional) education in four-year college is as neglected as PSOE.

about 60 percent<sup>3</sup>—are in occupational programs; almost all the rest are enrolled for broadly occupational purposes, even if they think these will be realized through academic programs and transfer. PSOE fulfills the promise of providing postsecondary education—increasingly viewed as necessary for both individual mobility and employer needs—for the large numbers of occupations for which baccalaureate degrees are not necessary, and indeed the economic returns to sub-baccalaureate education are highest for those who complete occupational programs and find related employment (Grubb 1999). The promises of “lifelong learning,” so often empty rhetorical flourishes, are probably best realized within PSOE, with its large number of older students returning for skill upgrading or retraining. And when comprehensive institutions like community colleges provide PSOE, their “bridging function”—their ability to create bridges or paths from one purpose to another—involves PSOE in a web of other programs and purposes. In this role, students who enter community colleges for remedial purposes, “experimenters” looking for a life path, welfare recipients, dislocated workers, or others in job training and adult education programs can find a way into the mainstream of economic life.<sup>4</sup>

If PSOE is more important than is often recognized, then it merits more research than is currently available. Like PSOE itself, research on this corner of American education has been badly neglected. Most of the research on vocational education concentrates on the secondary level; most of the research on community colleges focuses on transfer or academic education, or on the high-status “economic development” role of providing training for particular firms. And so PSOE has rarely had its day in the sun.<sup>5</sup> I therefore begin (rather than end) this paper with the researcher’s conventional plea: *more research is needed*.

In this paper I suggest a variety of topics for the National Assessment of Vocational Education to support as it reviews progress under the Carl Perkins Vocational and Applied Technology Education Amendments of 1998, or Perkins III. The task most closely related to the legislation itself is to examine how community colleges and other postsecondary institutions have responded to the key requirements of Perkins III, and I cover these in Section I. They include the development of accountability measures; the incorporation of academic competencies into PSOE and the integration of academic and occupational education; tech-prep efforts to link high schools and community colleges; the allocation of federal funds; and the types of institutions providing PSOE.

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<sup>3</sup>This is based on 1992–93 National Postsecondary Student Aid Survey data; see Tuma (1993), Table 2.1.

<sup>4</sup>See especially Section III.2, on the role of PSOE in the “new fluidity” that defines current postsecondary education and training.

<sup>5</sup>I have summarized much of my own work, carried out largely with the support of the National Center for Research in Vocational Education, in Grubb (1996b). One has to go back to Harris and Grede (1977) to find a comprehensive volume on PSOE; most reviews of community colleges, like Cohen and Brawer (1989) or Dougherty (1994), devote relatively little attention to PSOE. See also the *Journal of Studies in Technical Careers* published by the National Commission on Occupational Education.

However, while federal legislation for occupational education has addressed several important ways of improving PSOE, it has never been especially comprehensive, particularly in its approach to postsecondary issues. In Section II I therefore shift to a variety of topics intended to address the effectiveness of PSOE, using a five-part conception of the institutional conditions necessary for effectiveness as well as proposing certain research related to outcomes. This section is consistent with the broader purpose underlying federal legislation for vocational education, which has always stressed program improvement.

In Section III I examine four issues that are perhaps more important than any of the others presented in this paper: the question of who counts as “completers” in PSOE, almost certainly the most vexing question to PSOE administrators; the “new fluidity” in postsecondary education and its potential threat to established programs; the question of why federal legislation in many areas related to vocational education and training has often had unsystematic effects; and the correlative question of what role the federal government should perform. These issues are not raised directly in Perkins III, and these issues are not included in the congressional mandate to NAVE. But they represent the most pressing current developments in PSOE and the central dilemmas in federal policy toward PSOE. Therefore ignoring them may consign NAVE to irrelevance and the eighth circle of hell,<sup>6</sup> and can only ensure that federal legislation remains out of touch with current problems.

In Section IV I draw together the various *issues* presented in the first three sections into *research strategies*. Typically, each kind of research encompasses several issues; for example, the case studies of community colleges I propose could encompass a variety of issues, including local practices about integration, accountability, and tech prep as well as participation with other education and training providers. Furthermore, the various research strategies are related to one another: a broad sample of providers could respond to questionnaire surveys; a smaller sample of these institutions could become case studies; and a smaller sample of these could be the starting point for “community case studies” examining the variety of programs in a community. I will therefore cross-reference the research presented in Section IV to the issues presented in Sections I–III, and vice versa.

Finally, since I propose too many issues for NAVE to support, I briefly present my own priorities for research in Section V.

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<sup>6</sup>Readers will doubtless remember that the eighth circle of hell is reserved for those committing sins of fraud, including false counselors. See Cantos 26 to 28 of Dante’s *Inferno*, especially the wonderful translation by Pinsky (1994) illustrated by Michael Mazur.

Too often, proposals for research become little more than laundry lists of topics with little coherence, and certainly this paper could be critiqued for precisely that flaw. However, there is one central issue underlying virtually all of the research proposed in this paper: *how do we make postsecondary occupational education more effective?* This question is addressed in a few ways in Perkins III (Section I), though the approaches to effectiveness could be broadened, as I argue in Section II. And failure to consider some basic issues of current conditions will mean that future legislation is not especially powerful in improving effectiveness, which is why the topics in Section III are so important.

The stress on effectiveness is also, in my view, the way to think about equity in PSOE. The current equity problems are not, with a few exceptions, those of access to PSOE, since community colleges and other institutions providing PSOE are usually open-access institutions with low tuition, low opportunity costs, and high levels of both state and federal subsidies. The problems experienced by the groups who are the usual focus of equity efforts—low-income students, minorities, women seeking access to nontraditional employment, older students, dislocated workers, handicapped students, and other “nontraditional” students—are instead those of movement through these programs, of completion rather than noncompletion, of the coherence of learning and its value in the labor market. While there are some issues specific to equity and particular groups, particularly those considering support services (in Section II.3), the greatest improvement in equity would come simply from improving the quality of PSOE for all students.

Finally, the issue of effectiveness is one way of creating a compelling vision, or policy narrative,<sup>7</sup> for postsecondary occupational education. In secondary vocational education, such a compelling vision has emerged in the “new vocationalism” (or “education through occupations,” as I prefer to label it, or David Stern’s conception of “college and careers”)—in which academic and occupational competencies are integrated, in which school-based and work-based learning are linked, in which high schools are thoroughly restructured into smaller units (academies, clusters, or pathways), and in which broader forms of occupationally oriented education lead to further education as well as employment. But a comparable vision has not yet emerged for postsecondary occupational education, aside from the vision underlying most federal postsecondary policy—which has been simply to expand access through student aid and, more recently, tax credits. A compelling complement (not alternative) to the vision of access is a vision of effectiveness—and this idea underlies much of the research proposed in this paper.

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<sup>7</sup>I’ve been impressed with the extent to which policy in many countries is driven by narratives, or widely accepted and simple “stories” about why certain programs are worthwhile. The creation of such narratives typically takes a considerable period of time and many different participants; once widely accepted, policy narratives are resistant to change, and empirical evidence—the kinds of results that academics can generate—is not usually enough to modify or complicate a policy narrative. See, for example, Roe (1994).





## ***I.2: Incorporating Academic Competencies and Integrating Academic and Occupational Education***

Perkins III is filled with language exhorting and requiring PSOE to incorporate a range of academic, occupational, and technical competencies, and the first of eight requirements of local uses of funds specifically provides for the “integration of academics with vocational and technical education through a coherent sequence of courses.” It must be acknowledged that the purpose of stimulating broader and more integrated programs, through this and other provisions in Section 135 (including the “all aspects of an industry” provision), are accompanied by language permitting local programs to spend federal funds on a wide variety of activities, so that local programs can comply with federal requirements without paying the least amount of attention to this requirement for improvement (see III.3). Nonetheless, one of the central changes of Perkins II, continued in Perkins III, was the attempt to move away from the kind of “narrow vocationalism” often critiqued by the business community (e.g., Committee for Economic Development 1985, p. 15) toward a broader and more integrated conception of PSOE, parallel to a similar effort at the secondary level.

The most obvious task is to learn more about what local institutions have done to implement this provision. The prior NAVE conducted surveys of local programs to ascertain changing practices, and such questions could easily be included in questionnaires to local institutions (see IV.3). In my view, the earlier study generated local responses that were exaggerated; for example, 38.5 percent of institutions reported starting tandem courses—coordinated academic and occupational courses—before 1991–92, even though all my other experience with community college indicates that such courses are quite rare.<sup>8</sup> (See also Badway 1998, for a more extended argument and evidence that the prior NAVE had a low threshold for compliance with the integration requirements in Perkins II.) One possible interpretation is that, since the previous surveys were done quite soon after Perkins II was enacted, they represented hopes and dreams rather than reforms already implemented. Now, however, with an additional six years for implementation, it should be easier to see what local programs have put in place.

However, the possibility for exaggeration is still high, particularly because these surveys are completed by central administrators whose knowledge of what happens in classrooms is usually somewhere between limited and zero (Grubb and Associates 1999, Ch. 8). Therefore, any replication of this survey should be complemented by case studies of local colleges and other providers

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<sup>8</sup>See Grubb and Stasz (1998), Table 4.31, and the discussion of postsecondary integration on pp. 181–186. These figures might be accurate if each institution reporting integration practices has only one or two instances of it, but this is still misleading about the prevalence of integration practices. The postsecondary questionnaire was devised by me, using a typology of approaches to postsecondary integration first presented in Grubb and Kraskouskas (1992). My recommendation to complement questionnaire results with local case studies was not implemented, perhaps because of lack of funding.

(see IV.4) to see precisely how academic competencies are incorporated or integrated into PSOE. These local case studies should ideally include interviews with occupational deans and instructors to get their perspectives on such integration, on what has been accomplished, and on the (inevitable) barriers to integration. However, while self-assessments of teaching practices are reasonably accurate under some circumstances, they are invariably exaggerations (Mayer 1999) and they fail to convey precisely what happens within classrooms—as the observation-based writing of Grubb and Associates (1999, Ch. 7) and Perrin (1998) illustrates. Therefore, the case studies should include observations of occupational classes and integrated classes to examine the extent and form that integration of academic competencies take.

Some community colleges collect good longitudinal evidence on their students, and potentially this could be used to examine the effects of integration on progress and subsequent success (see IV.11). For example, where some occupational classes are linked with academic classes and some are not, it may be possible to compare the subsequent success of students in the two different settings. While obvious problems of selection and self-selection may be present, NAVE researchers ought at least be alert to opportunities for further analyses of local data.

### ***1.3: Tech Prep***

Starting in Perkins II, tech prep is a vision of linking the last two years of high school with two years of community college, where the links could (and should) include the reform and integration of curricula at the two levels as well as mechanisms to enhance the transition between the two. At least in theory, tech prep is a mechanism that would encourage more “noncollege bound” students to attend postsecondary education, and to enroll without the need for remedial education that has become so pervasive.

However, like many of the aspects of work force development programs, the term “tech prep” has taken on several meanings among local educators: sometimes it refers to efforts to integrate academic and vocational education, sometimes to simple articulation agreements between high schools and colleges, and sometimes to school-to-work programs incorporating some work-based learning. There’s been a substantial amount of research already on tech-prep programs, including a national evaluation (Hershey Silverberg, Haimson, Hudis, and Jackson 1998) as well as many studies by NCRVE (e.g., Bragg, Layton, and Hammons 1994; Bragg 1996; Grubb, Badway, Bell, and Kraskouskas 1996); Debra Bragg is now in the midst of an evaluation of the effects of tech prep, supported by NCRVE. Most of these find incomplete implementation of tech prep, with local programs usually incorporating components (like articulation agreements or integrated curricula at the high school level) but very few developing truly integrated programs.



Another finding, particularly important for postsecondary institutions, is that the most substantial changes have been at the high school level, with changes (including curricular changes) in community colleges relatively less common. In the early days of tech prep this was due to the fact that students ostensibly in tech-prep programs had not yet reached community colleges; even in Bragg's current research, the number of completers is still small. Three research strategies seem obvious. One is to continue Bragg's research, now scheduled to end this year, as a way of gathering more information about the eventual completion (or noncompletion) of students in the postsecondary component of tech-prep programs. Another is to include examination of tech-prep programs in the institutional case studies (IV.4) to learn more about the curriculum developments (if any) and the barriers at the postsecondary level; the marginal cost of such research would be small. The final strategy is to incorporate some questions into the questionnaire surveys of community colleges (IV.3), parallel to those asked in the previous NAVE; as is true for the integration of academic and occupational education, the earlier results constitute a benchmark and it will now be possible to see how much progress there has been and what kinds of postsecondary institutions seem to have made the most progress.

However, it's difficult (at least for me) to imagine that further research on tech prep will lead to powerful new insights. The finding of incomplete implementation of tech prep has emerged over and over again, and is likely to be rediscovered yet one more time. Therefore, I suspect that the most interesting question to be asked of tech prep programs is why federal legislation has so often led to partial reforms and "business as usual," even when the underlying ideas are widely celebrated (see IV.3).

#### ***I.4: Where Does the Money Go?***

A basic question to be addressed in NAVE is the question of how federal funds under Perkins III are spent. This can be addressed in several ways: by examining state plans and supporting fiscal documents (IV.1), and by examining both the *pattern* of spending and the *process* by which decisions about Perkins funds are made in local institutions, through case studies (IV.4).

In the past, a great deal of Perkins funds have been spent on normal expenditures and routine reforms—new equipment, for example, or updating courses in ways that might be thought to be the responsibility of local programs using state and local resources. This is explicitly allowed in Perkins III, which permits funds to be spent to "initiate, improve, expand, and modernize quality vocational and technical education programs," but it is contrary to the intent of program improvement in any more fundamental sense. One potential reason why this has been true is that most local public institutions are funded through formulas that seem to have academic programs in mind. There is no recognition for the variation in costs among programs, and no routine alloca-



allow tax credits to be of any use. Therefore a separate study should try to estimate the flow of these two tax credits to students in sub-baccalaureate postsecondary institutions generally and in PSOE in particular. Alternative methodologies may be necessary: one is to survey students to see what proportion of those in community colleges and technical institutes (and in four-year colleges) applied for these tax credits; from the federal perspective, IRS records can provide information on the total amounts of these tax credits claimed and they can in theory identify the types of institutions attended since taxpayers qualifying for these credits must identify the institutions they attended. The distribution of these tax credits is a sufficiently broad issue that NAVE might be able to join forces with other research organizations—for example, the College Board, with its continuing interest in the funding of postsecondary education—to examine these funding patterns.

Federal funding for PSOE is particularly complex because the funds are partly direct expenditures to institutions (e.g., Perkins III and FIPSE), partly direct expenditures to students (grants and loans), and partly tax expenditures to students (in Hope and Lifelong Learning Tax Credits). One question that should be incorporated in any overall examination of the federal role in PSOE (see IV.4) is whether this mix of funding—inadvertent and unplanned—is the most effective and equitable way to support PSOE.

### ***1.5: Types of Postsecondary Institutions***

While the majority of PSOE, and of funds through Perkins III, is surely spent in community colleges, there are many other postsecondary institutions that provide PSOE, many of these poorly understood—except, perhaps, by those within them. These include technical colleges and institutes, which provide two-year associate’s degrees but are (unlike comprehensive community colleges) generally confined to occupational subjects;<sup>10</sup> area vocational schools (the Regional Occupation Programs and Centers in California, the BOCES in New York), which often provide various certificates to adults; postsecondary programs operated by local educational authorities, which include adult schools in many states and some vocational schools and career centers; some vocational centers operated primarily with job training funds that may also receive some Perkins funds and provide certificates similar to those offered in community colleges or area vocational schools; and other hybrids and consortia too varied to name. Perkins III recognizes institutions of higher education (community colleges and technical institutes), LEAs providing postsecondary education, area vocational schools, postsecondary institutions operated by the Bureau of Indian Affairs to any Indian tribe, educational service agencies, and consortia (Sec. 3 (10)).

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<sup>10</sup>This is not uniformly true; several of the technical institutes in Wisconsin have started transfer programs, and some faculty there predicted that the higher-status academic role would begin to diminish the occupational programs.

A useful exercise would be to catalogue the variety of these postsecondary institutions, to determine the amounts of federal funds going to each, the enrollments and types of credentials granted, and the trends in these enrollments. The sources of data could include national data sets like NPSAS and the Beginning Postsecondary Surveys, state enrollment and expenditures data, and federal sources on the allocation of Perkins funds. There's a boundary problem to confront: the types of institutions considered will differ if the starting point is (a) the universe of institutions receiving Perkins funds; (b) the institutions reported in a particular national data set, like NPSAS or BPS; or (c) data collected from states on their definitions of postsecondary programs. One task, therefore, would be to examine how various ways of identifying these institutions affects the numbers and types of institutions considered.

To examine trends, however, data over time would be necessary. It appears, for example, that technical institutes are converting to comprehensive community colleges,<sup>11</sup> as part of a larger historical process of replacing specialized institutions with comprehensive ones. Area vocational schools also seem relatively unimportant, except perhaps in certain states that have maintained systems of them; in other cases they have been upgraded into technical institutes. But the information on which my observations are based are random and incomplete; a more systemic study could identify the patterns throughout the country more accurately.

While the descriptive purposes of examining enrollments and funding patterns are useful, a purpose more consistent with the theme of effectiveness is to examine the types of programs offered. There are certainly some highly sophisticated programs being offered by these varied institutions, like the two-year programs in technical fields offered by the Texas State Technical Colleges. On the other hand, many area vocational schools and career centers appear to offer short (e.g. 15-week) programs for relatively unskilled occupations, quite similar to the short-term job training programs offered by JTPA that have proved so ineffective.<sup>12</sup> More generally, the economic benefits of short PSOE programs are varied and uncertain (Grubb 1999), at least compared to longer programs and associate's degrees. Any study of the varied types of postsecondary institutions should try to uncover data on their effectiveness—either by finding local follow-up studies or perhaps state UI wage record data (see II.6 below)—to see whether more can be learned about the labor market value of such programs. In the absence of more specific state or local data, however, my concern is that institutions providing short-term training are relatively ineffective.

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<sup>11</sup>In Minnesota technical institutes and community colleges were combined; in South Carolina technical institutes were converted into comprehensive community colleges; there are apparently some initiatives in Louisiana to convert a welter of technical institutes into a more coherent system of comprehensive community colleges.

<sup>12</sup>On the ineffectiveness of short-term job training programs, see Grubb (1996a).

### ***I.6: Substate Allocation of Perkins Funds***

One persistent aggravation among PSOE administrators is that federal legislation requires states to allocate Perkins funds according to the number of students receiving Pell grants (Section 132), presumably in an effort to allocate more funding to institutions with low-income students. However, the number of Pell recipients is not necessarily a good indicator either of the number of students in PSOE or of the concentration of low-income students, partly because Pell grant recipients include many academic students and therefore don't reflect needs for PSOE; partly because many PSOE students are part-time and therefore ineligible for Pell grants; partly because many of them are older and do not appear to apply for grants and loans; and partly because the rates of receiving Pell grants may be related to factors—e.g., the amount of information provided to students, the extent of assistance with student aid, the sophistication of students in dealing with institutions—that have nothing to do with the needs for PSOE. One study might therefore examine alternative methods of allocating funds, to see what difference it makes to the overall distribution and to weigh the consequences of different allocation formulas. Alternatives might include, for example, the number of students in PSOE, where enrollments in PSOE could be defined in various ways; the total enrollments in local institutions, on the assumption that Perkins aid should be potentially available to all students in sub-baccalaureate institutions; the number of PSOE students weighted by local income, to allocate more resources to institutions in low-income areas; the number of PSOE students weighted by the local unemployment rate, to distribute more funds to low employment areas; or some measure of the size of the sub-baccalaureate labor market, to tie funding to the extent of appropriate employment rather than enrollments. Each of these (and other) measures would change the distribution of funds and the incentives on local programs. This information would also be useful in considering the potential direction that federal policy toward PSOE might take (see IV.4).

## **II. Beyond Perkins III: Five Principles for Effective PSOE Programs**

Since the early 1960s, one of the central purposes of federal aid for vocational education has been program improvement. Most recently, in Perkins II and now in Perkins III, improvement has principally been defined as the integration of academic and occupational education, the creation of tech-prep programs, and the development of performance measures to reflect outcomes. However, there are many more dimensions to effectiveness than these three particular approaches, and NAVE ought to consider research related to effectiveness and program improvement that goes beyond the conception embedded in Perkins III.

In examining effectiveness, there is often no substitute for analyzing outcomes, and I propose several ways to research outcomes in Section II.6. However, often it is impossible to meas-

ure outcomes. In other cases, changes need to be considered before long-run outcome measures can be available, and in any event evidence of poor outcomes is literally useless without some sense of what kinds of improvements might enhance outcomes. Therefore it is almost always necessary to have some idea of what elements of PSOE programs are necessary for greater effectiveness, in addition to (and sometimes instead of) information about outcomes. Over the last several years I have developed five criteria to judge the effectiveness of many types of occupational education and training programs, based on my reading of the available evaluation and econometric literature and on the characteristics of particularly effective programs.<sup>13</sup> Others may differ about whether these are precisely the right criteria and about how important each of them is, but they at least provide a starting point for thinking about effectiveness—and the potential research that might illuminate improved practice. Each of these five criteria therefore serves as a starting point for at least two kinds of research: determining what conventional or modal practices in PSOE are, and identifying promising practices for others to emulate.

### ***II.1: Labor Market Information and Connections***

*Effective programs understand the local labor market, and target those jobs that are likely to employ individuals with community college credentials, with relatively high earnings, strong employment growth, and opportunities for individual advancement.* Some community colleges do this through careful local needs assessments; others, particularly those with extensive co-operative programs, accomplish this by maintaining stable links with local employers. Programs in high employment areas, and many programs during the current economic boom, can get away with ignoring this recommendation, of course, though probably at the expense of long-run effectiveness. But those colleges that fail to consider the hiring requirements and the quality of jobs for which they provide occupational preparation are likely to place individuals in minimum-wage positions with few prospects for advancement, with dismal results over the long run.

There are various mechanisms by which local institutions can keep abreast of labor market patterns and trends, including formal labor market assessments, advisory committees, the local contacts of individual instructors, placement office, follow-up studies, and—most impressive of all—the contacts afforded by high-quality co-operative education programs. However, the extent of these efforts varies substantially, and some—for example, advisory committees that meet once a year for ceremonial functions, or placement offices that stress low-quality “stay-in-school” jobs, or instructor contacts that are uneven and idiosyncratic—are not much use at all (Grubb 1996b,

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<sup>13</sup>For fuller development of these five criteria, see Grubb (1999a), Grubb and Ryan (1999), or Grubb et al. (1999). It’s surprising to see how different such lists of principles can be; for a very different set of principles, focusing on how students feel (e.g., “each young person needs to feel that at least one adult has a strong stake and interest in his or her labor market success”), see Walker (1997).

Ch. 6). Thus, contact with local labor market conditions is far from automatic in PSOE, and may need improvement in many cases.

Two kinds of research are possible. One is to ascertain how the mechanisms that potentially connect local programs with employers and labor markets actually function, through local case studies (see IV.4). An adjunct to such a study would try to identify best practices from around the country, to provide guidance to community colleges and other PSOE providers about the most effective ways of maintaining connections with local employers.

The second and complementary study would question *employers* about their practices—particularly about their proclivity to hire from local PSOE programs rather than other sources, their preferences for experience over formal schooling, the kinds of promotion practices they use and the role of formal PSOE in promotion. Some observers have concluded that many employers—at least those at the sub-professional level—hire on the basis of skills attained regardless of the source of those skills, so that community colleges students compete with those trained in the military, those who have learned through experience, and others who have picked up skills in informal or self-taught ways. In other cases, licensing requirements, company policy, and formal or informal agreements with local colleges create tighter linkages between formal PSOE and employment. Further analysis of employer practices—through either survey methods, interviews (see IV.8), or the analysis of several local labor markets (see IV.5)—would help clarify where employment practices encourage rather than discourage hiring from local PSOE programs.

## ***II.2: Curriculum and Pedagogy***

*Effective programs contain an appropriate mix of academic (or remedial, or basic) education, occupational skills, and work-based learning, in the best cases integrated with one another. In addition, while flexible and innovative scheduling may be necessary, the intensity of both academic and vocational education must be appropriate to the jobs being targeted. Finally, effective programs pay attention to the pedagogy of everything they teach, whether classroom-based or work-based.*

This principle, which really embodies three interrelated conditions for effectiveness, clarifies the obvious point that PSOE is an *educational* program. If the fundamental conditions for learning are not present, then PSOE can at best serve as a signal of motivation, ability, or some other valued characteristic but cannot make students more productive. Research under this principle is potentially vast, since there is virtually no analysis in this country of the effectiveness of different approaches to curriculum and instruction (Achtenhagen and Grubb 1999). One strand includes the research on the incorporation of academic competencies proposed above in Section I.2.



Another strand could include more focused research on work-based learning, and its integration with other components of instruction. Despite the recent interest in this country in work-based learning, and the small amounts of funding from the School-to-Work Opportunities Act, work-based learning is comparatively rare in most community college (except in certain fields like nursing). The questionnaire-based surveys of community colleges provide one opportunity to ask about the extent of work-based learning, though such results would no doubt simply replicate those available from earlier studies (e.g., the Bragg studies cited earlier). The case studies (see IV.4) are probably more effective ways to ascertain the role of work-based learning, including the resources available to support it, the nature of its integration (if any) with the rest of the curriculum, and (potentially) measures of effectiveness if the case study institutions have adequate data on student outcomes.

The other topic that has been virtually unexplored in the area of curriculum and pedagogy is the nature of teaching in PSOE. Aside from one chapter describing occupational classes in Richardson, Fisk, and Okun (1983) and an analysis of occupational teaching in several chapters of my recent book (Grubb and Associates 1999), there's been nothing written about the nature and challenges of teaching in postsecondary occupational subjects. (For a broader review of the international literature, see Achtenhagen and Grubb 1999.) From the work that has been done, I have argued that occupational teaching is in many ways more complex than academic teaching: it incorporates a greater variety of competencies or "intelligences"; more settings, typically including classrooms, workshops, and sometimes job placements; different and often more demanding forms of reading, writing, and mathematics than are taught in conventional academic classes; a greater number of literacies including specialized diagrams and charts as well as conventional writing and mathematics; and distinctly different approaches to teaching that I have labeled "skills" versus "systems" approaches, paralleling the distinctions between behaviorist and constructivist teaching in other subjects. Yet for all this complexity, PSOE instructors receive virtually no preparation in teaching (save in Iowa and a few isolated community colleges), and most postsecondary instructors learn how to teach through trial and error. The classroom observations I have recommended as part of institutional case studies (see IV.4) could readily be extended into a special study of its own. This special study might, for example, concentrate on PSOE teaching within selected occupational areas, or within occupational areas subject to licensing or to industry-generated standards (see IV.1). or within institutions where instructor training is practiced. In any of these forms, its central purpose would be to further investigate the nature of pedagogy in PSOE, the origin of different instructors' approaches to teaching, and the potential ways of improving instruction.

Finally, I should acknowledge the difficulty of addressing questions of the appropriate intensity for PSOE programs. The dismal outcomes of job training programs are due in substantial part



to their limited duration and intensity; within PSOE, the economic returns are clearly higher to those completing associate's degrees than to individuals with certificates taking shorter amounts of time or those with varying amounts of coursework. If more is better, then how much is enough? And when is more too much? One way to examine this question is to examine the industry-generated standards and licensing requirements described in Section IV.1, since these specify from the *employer's* perspective how much education is enough for various positions. Another is to examine the debates within occupational fields about the intensity of postsecondary education, though this discussion can take place only in occupations where there is some kind of organization—either an industry association, a licensing body, or an association of instructors—to convene such a discussion. For the moment, the former seems an easier starting point.

### ***II.3: Support Services***

*Effective programs provide a variety of support services, as appropriate given the needs of their students.* While PSOE may be principally an educational program, an institution that fails to consider the need for support services may have low completion rates and fail for that reason alone. In community colleges and other forms of PSOE, five kinds of support services seem particularly important for students in occupational education:

- **Guidance and counseling mechanisms:** Particularly for “experimenters” unsure of what they want to do, or dislocated workers looking for alternative occupation, or welfare recipients seeking a way back into the labor force, guidance and counseling is particularly important. Guidance and counseling *mechanisms* could include introductory courses or project-based efforts to get students to learn about occupational alternatives and the efforts of occupational instructors themselves, and not simply the efforts of guidance counselors in their offices. The Puente program in California, which creates learning communities of instructors along with counselors, provides another interesting model of integrating counseling into instructional programs.

However, as in high schools, there are many complaints about the adequacy and type of counseling available in community colleges and other postsecondary institutions; counselors are often criticized for providing information solely about academic issues and transfer, neglecting career-oriented counseling. While instructors and administrators can describe what happens within their own institution, there seems to be no central source of information about postsecondary guidance and counseling, no established conception of the developmental processes involved in adult decisions about careers, no conventions about good practice. NAVÉ could provide a substantial service to PSOE by carrying out, perhaps as part of case studies (IV.4), an analysis of what's now available in postsecondary guidance and counseling and some method of developing conceptions of good practice.

- **Remedial/developmental education:** The problem of underprepared students in all postsecondary programs has grown substantially, and PSOE is no exception. Commu-

nity colleges and technical institutes typically provide some forms of remedial or developmental education, though the type and quality of these programs varies enormously, and almost nothing is known about the effectiveness of these programs in helping students complete their goals. In the best cases, individual instructors have developed their own approaches (often constructivist) through trial and error, or a developmental studies department has devised a coherent policy, or instructors have linked developmental courses with occupational courses in learning communities. (See also I.2 above, on integrating academic and occupational education for remedial purposes). In others forms of PSOE, remedial education may be missing, or students may be directed to adult education programs of varying (and mostly abysmal) quality.<sup>14</sup>

The nature and effectiveness of remedial/developmental education is a large subject, applicable to most postsecondary institutions, and this is not an issue that NAVE can readily research on its own. As with many other questions, the case studies of local institutions (see IV.4) provide one opportunity to examine the nature of these efforts, their relationships (if any) with occupational programs, and (if institutions have good enough data) their effectiveness. However, NAVE might also explore the possibilities for joint research with other government agencies and centers concerned with the quality of postsecondary education.

- **Retention programs:** The issue of who is a completer, and whether completion as defined by certificates and associate's degrees is important, is one of the most vexing questions in PSOE, one that I examine more fully in Section IV.1. For the moment, however, it is sufficient to point out that community colleges have made various efforts to increase retention and completion. They can be categorized as sorting, supporting, connecting, and transforming strategies (Beatty-Gunther 1994), and the best community colleges use a variety of them. Again, institutional case studies (see IV.4) provide the easiest ways of learning more about the nature of these efforts and their interactions with occupational programs more specifically.
- **Placement efforts:** In occupation-specific forms of education, the benefits may be lost unless an individual finds employment related to his or her field of study. Results from national data confirm that the economic returns to PSOE are much higher when individuals find related employment, especially among women (Grubb 1997 or 1999); and some preliminary California results based on UI data corroborate these findings. Therefore, occupational education by itself may be necessary but not sufficient to gain access to well-paid employment, and placement efforts may be necessary as well. Again, local case studies provide low-cost ways of examining what community colleges and other local PSOE programs now offer.
- **Services for students with disabilities:** Because community colleges are open-access institutions with relatively low spending levels, the diagnostic procedures to identify students with learning disabilities are often weak, and services to help such students are often inadequate. Community college instructors report that they suspect having stu-

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<sup>14</sup>The source of my nastiest statements include Grubb and Associates (1999), especially Ch. 5 on teaching in remedial/developmental classes; and Grubb and Kalman (1994).

dents with learning disabilities, but do not know how to help them and have nowhere to refer them. Such students often end up in remedial classes, which may not be appropriate. While I am not the right person to recommend how to address this issue, a fuller analysis of support services would consider carefully the availability of such disabilities and their effects on the progress of the students themselves as well as their effects on other students.

#### ***II.4: Connections to Other Programs***

*Effective programs provide their clients or students with pathways or “ladders” of further education opportunities, so they can continue their education and training when they are able to.* One issue of creating such pathways in PSOE involves the link between high school and community college, in the tech-prep programs described in Section I.3 above. The other common linkage is that between community colleges and four-year colleges, in articulation mechanisms to smooth the process of transfer. In many occupational areas—e.g., business, computers and information technology, engineering technology, some health occupations—the possibilities of transfer are substantial, and both instructors and institutions provide encouragement and support (like transfer centers); in other areas—automotive areas, metal trades, construction trades, cosmetology—there are no comparable baccalaureate-level programs and so articulation mechanisms are scarce. The possibility of and support for transfer should be one of the issues incorporated into local case studies (see IV.4).

However, the most important kinds of connections for NAVE to investigate are probably the connections among different types of occupational education and training programs. These connections—the efforts to create more coherent systems of work force development encompassing short-term job training, adult education, welfare-to-work programs, training for incumbent workers, and occupational education in postsecondary institutions—have been the subject of substantial research by NCRVE (see Grubb et al. 1999, for the latest effort) as well as research by the earlier NAVE (e.g., Hollinger and Harvey 1994). However, changes in federal legislation—particularly the Workforce Investment Act (WIA) of 1998 and the changes in welfare legislation passed in 1996—have substantially changed the conditions within which local programs operate, and therefore new research may be warranted. In particular, the emphasis of both welfare legislation and WIA on “work first” conceptions—in which individuals are first placed in employment without worrying about their competencies—contradicts the human capital emphasis of PSOE, and the resolution of this conflict is a central issue.

The issues involved in relations with other programs include the provision of services and special programs for welfare recipients (if any); the ways PSOE institutions participate in state and local Workforce Investment Boards; the incorporation of PSOE into information and services

provided by local one-stop centers, which play a central role under WIA; the eligibility of PSOE for the Individual Training Accounts (ITAs) provided some individuals, the numbers and types of individuals who actually use ITAs to attend community colleges and other forms of PSOE; and the difficulty PSOE institutions have in meeting WIA accountability measures (see I.1 above). The period within which NAVE will operate—with data being collected roughly between summer of 1999 and summer of 2001—will be one of substantial turmoil, as states create Workforce Investment Boards under WIA and begin planning local efforts, and therefore it may be possible only to understand how PSOE is participating in this process and not what the outcomes are.<sup>15</sup>

One way to carry out this research is again to incorporate questions about participation in WIA into the questionnaire surveys (see IV.3) and local case studies (IV.4). However, because these issues involve interactions between PSOE and other programs, it would be far better to conduct research examining WIA efforts and welfare programs as well as PSOE. This can be accomplished with community case studies, where several communities are identified and all the programs within these communities providing PSOE, job training under WIA and welfare, adult education, and other forms of work force development are examined to learn about their interactions (see IV.5).<sup>16</sup> In this way the perspectives of each program about the others can be ascertained, rather than viewing the cooperation among programs solely from the vantage of community colleges and other PSOE institutions. Of course, the communities selected for such studies could be a subset of the communities in which the institutional case studies (see IV.3) are conducted, so that the community cases studies are effectively extensions of the institutional case studies.

## ***II.5: Data and Improvement***

*Effective programs collect appropriate information about their results and use these to improve their quality.* In the case of PSOE, these informational issues include the development of accountability measures, examined above in Section I.1, and the development of state and local data on employment outcomes, examined in the next section.

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<sup>15</sup>WIA requires states to complete state plans between April 1, 1999, and April 1, 2000, with all states implementing WIA by July 1, 2000. Quite apart from the fact that many states may be late with their plans, this means that the year 2000–2001 will be the first year of full implementation of WIA, and we can anticipate that this will be a year of transition and confusion. But this is the second and final year of NAVE’s data collection, so that NAVE at best will be able to learn about plans in progress.

<sup>16</sup>The technique of community case studies underlies the NCRVE research reported in Grubb and McDonnell (1991 or 1995), for example.

## ***II.6: Outcome Measures: National and State Sources***

To many researchers and policymakers in particular, outcome measures—rather than the elements of program structure I have covered in Sections II.1 to II.5—are the only reliable indicators of effectiveness. The good news is that better data have become available in the last ten years, both from national data sets and from state data sets based on UI wage record data.

In terms of national studies, I have recently surveyed the available literature for the Community College Research Center (Grubb 1999), and I see no reason for replicating that survey. There are, however, some topics that have not been extensively studied, and if NAVE wants to invest in further analyses of national data, it should concentrate on these issues. One of them is the problem (see also IV.1) of whether students who complete small amounts of PSOE benefit or not; this requires disentangling the effects of field of study, the relatedness of education and subsequent employment, and student intentions (i.e., for upgrade training) on economic returns, since it's likely that all of these influence the value of small amounts of education. A second issue that merits more exploration is the effect of finding education-related employment, since this has been investigated in only one study (Grubb 1997); there are obvious selection and self-selection effects to consider, as well as alternative ways to define education and employment as being related or not. Third, the effect of local economic conditions and of the business cycle on the employment benefits of sub-baccalaureate education have not been studied, though they are arguably quite important. A study reanalyzing certain data sets—particularly the Survey of Income and Program Participation and the National Longitudinal Study of Youth—could address these unanswered questions (see IV.8).

States have made great progress in developing data based on UI data. A few states have been leaders in these efforts, including California, Washington, Texas, Florida, and North Carolina. However, the analyses they have carried out so far are relatively unsophisticated (partly for political reasons), and have generally been confined to a few cross-tabulations. One valuable NAVE project would therefore be to take one or more of these state data sets and carry out more sophisticated multivariate analyses (see IV.10). In addition to carrying out such analyses, such a study should consider how to translate complex findings into simpler terms, since policymakers and administrators are unable to read regression coefficients. In addition, I propose in Section IV.1 using these state data, in conjunction with other information, to carry out further analysis of the complex issue of completion.

One other use of state UI data would be to conduct an outlier study. In the school effectiveness literature, particularly effective (and ineffective) schools were identified with regression analysis of test scores controlling for family background and school resources; schools with high positive residuals were then considered especially effective, and case studies were conducted to

see how they differed from other schools. Similarly, in the realm of job training, Chris King and his colleagues (King, Lawson, Olson, Trott, and Baj 1998) selected especially effective JTPA programs in Texas and Illinois based on earnings over 155 percent of poverty and on continuous employment. The outliers they visited were committed to a structured process for determining high demand and emerging occupations; they emphasized occupational skills training rather than short-term job search assistance and on-the-job training; they stressed certain support services, including intake, assessment, counseling, and case management continuing throughout the program and afterwards; and they constrained the choices of training activities, referring individuals only to approved providers and only in high-demand or emerging occupations. (These characteristics correspond to the principles articulated in Sections II.1, II.2, and II.3 above.) A similar outlier study could be conducted of community colleges, for example, by using regression analyses of a state's UI data, identifying programs with high placement rates and earnings controlling for student characteristics and local economic conditions, and visiting those programs to see what characteristics of effectiveness are present. Such a study would build on the reanalysis of a state's data (see IV.10), and then add a small number of additional case studies.

### **III. Beyond Perkins III: Other Crucial Issues**

The topics suggested in Section II move beyond the provisions of the Perkins Amendments of 1998, but they do not address other fundamental issues about the context of PSOE and about the nature of federal legislation. In discussions with occupational educators and researchers, a small number of these other issues emerge again and again, and they could form the basis for other research studies.

#### ***III.1: The Meaning of Completion***

By far the most vexing problem to occupational educators is the question of what constitutes completion. In conventional analyses, completion of PSOE is marked by receipt of an associate's degree—typically requiring about 60 credits including a sequence of occupational courses, related academic courses, and general education requirements—or a certificate, typically requiring about 30 credits in occupational subjects only (though some certificates are shorter or longer).<sup>17</sup> Associate's degrees and certificates are typically defined and recognized by states, they show up on transcripts, and in my reading of course catalogues they usually require a relatively coherent group of courses. Completion has substantial economic benefits, including “program” or “sheepskin” effects (Grubb 1999); many policymakers feel it should be encouraged, and completion rates

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<sup>17</sup>Even the receipt of an associate's degree or certificate may be ambiguous. In California, some colleges require students to apply for these credentials, while others grant them automatically when a student has accumulated sufficient credits. Rates of completion are obviously higher in the latter institutions.



are among the performance measures required by both Perkins III and by WIA. But rates of completion in PSOE are quite low, and this has been a continual embarrassment to community colleges and other providers.

However, many students who leave PSOE without associate's degrees or certificates may nevertheless complete what they set out to accomplish. These include at least two distinct categories:

- (1) Some students, particularly those needing upgrade training, intend to enroll only for a course or two. These students are more likely to be employed, to be older, and to continue in the same job. Students needing retraining, including dislocated workers, may switch occupations, but they too may enroll for only the number of courses they need to find a new position; they are also likely to be experienced workers. One way to identify these “completers” is through their intentions; some community colleges that collect data on student intentions report that large fractions of older students claim to want only a few courses. Under some circumstances, the same may be true of students needing remedial education.
- (2) Students may complete credentials other than associate's degrees or certificates. These include licenses, including those required for health professions, cosmetologists and other personal service workers, some construction trades, aviation mechanics licensed by the Federal Aviation Administration; the kinds of industry-generated certificates (IGCs) created by industry associations with voluntary standards, including such groups as NATEF (the National Automotive Technicians Educational Foundation) and the American Welding Society; and some IGCs created by individual companies, such as the credentials offered by Novell and Microsoft to those individuals training specifically on their software. If students learn enough to pass such licenses and IGCs, they may leave PSOE and appear to be drop-outs when they have in reality completed a credential with, arguably, some value in the labor market. Finally, some community colleges have begun to modularize occupational programs and create shorter credentials or early-exit options, partly to recognize the reality that students leave before completing credentials, and partly to provide welfare recipients with credentials with the allowable training period. Whether these credentials have any market value is unclear, though no doubt there is local lore in specific colleges.

The fraction of “dropouts” who are really “completers” in one of these two senses is currently unknown. PSOE administrators and instructors can relate many stories about specific students who are completers in these ways, but their implication—that *all* PSOE students are really completers—is surely not true. Given the importance of this question to conceptions of effective-

ness, as well as to information about the changing conditions of PSOE, NAVE might carry out studies specifically to examine the conception of completion.

There are at least two parts to such research. One, of course, is the investigation of student intentions. The ideal study would either create a survey of student intentions—or use one that community colleges are now using—and then verify the results through student interviews (see IV.7). The importance of interviews is that some students who are really “experimenters” may exaggerate their intentions, or may state intentions (like transfer and completion of a B.A.) that are socially acceptable but unstable;<sup>18</sup> it’s equally possible that older students searching for a substantial change in employment state intentions for completing only a few courses until they figure out the alternatives. This component of research could also try to link student intentions to information about student outcomes, either from institutional records or from UI data, to examine the match among intentions, courses and degrees completed, and employment outcomes.

The second component requires examining the receipt of licenses, IGCs, and other non-standard credentials. The problem is that the sources of information are varied. Of course, questionnaires to students about such credentials is one source of information, though response rates to student surveys are typically very low. Information about state-required licenses could come from states, and in a few cases from colleges that administer licensing exams; information about IGCs could come from the industry associations themselves. In theory these different sources of information could generate information about which individual students in a specific college and in a particular cohort have completed such credentials, and then UI data or other follow-up data could be used to ascertain their subsequent employment and earnings. One alternative is to choose a few community colleges in relatively well-defined labor markets, in states with adequate UI data, and use them as test cases to develop both the methodology of track alternative credentials and their effects on employment.<sup>19</sup>

The development of IGCs presents still another issue for NAVE to address. In this country, interest in skill standards has led to a series of pilot projects funded by the Department of Labor to create standards in 22 industries. However, IGCs are evidence of industry-generated standards (or IGSs) that have already been created by industry associations who feel a need for such standards and credentials, rather than being artificially created by government sponsorship. A study of such IGSs and IGCs could focus on a limited number of such industry groups, ascertain how

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<sup>18</sup>In my own interviews with students, reported briefly in Grubb (1996b, Ch. 2), it became clear that many students who reported wanting to transfer had no idea about what that might mean. These were effectively “experimenters” who reported transfer as their intention because of the limitations of forced-choice questionnaires.

<sup>19</sup>For example, Richard Fonte, the president of Austin Community College, has suggested that Austin, Texas, and Portland, Oregon, might be appropriate test cases because they have been so substantially affected by IGCs in the information technology and computing areas, and because they are in relatively bounded labor markets.



widespread such standards and credentials are, how widely they have been adopted by community colleges and other PSOE providers, what their use by employers is, and what value they have in hiring, promotion, wage setting, and other aspects of employment.<sup>20</sup> The appearance and the apparent expansion of IGSs and IGCs provides a natural experiment in skill standards, one that could shed considerable light not only on the developing conditions of PSOE but also on the conditions under which skill standards are likely to be effective.

### ***III.2: The Environment of PSOE: The “New Fluidity”***

There’s a new day dawning in PSOE, many observers report. Students accumulate credits from many different institutions, including four-year and two-year colleges; they may learn skills from company-sponsored courses or IGCs, or through the military or experience, or on the Internet or through distance learning so that the spatial limitations of conventional providers are irrelevant. Employers care about skills, not credentials, so the accumulation of skills from different sources, without credentials attached to them, is still effective in providing access to employment. In this fluid environment, the notion of entering a “two-year” college, attending full time, progressing steadily through the requirements for general education and a major, and receiving an associate’s degree in roughly two years is a rare event, an image of the past (Schneider and Stevenson 1999, Ch. 9). In the “new fluidity”—to give it a name—students draw on many providers of education and training, and the educational programs so carefully put into place by community college instructors debating the coherence of their offerings are all but irrelevant. The “new fluidity”—which may not be so new, after all—is sometimes invoked to explain why there are so few completers in community colleges, and sometimes used to describe a world of fierce competition among providers, where community colleges may lose their “customers” to the Internet, distance learning, other public and private providers.

However, it isn’t clear how realistic this portrait is, or how extensive the mix-and-match practices of the “new fluidity” are.<sup>21</sup> It isn’t clear how students signal their skills to employers, for example, or how the pattern of earning credits from many providers can teach the competencies like SCANS skills and other higher order competencies that some employers say they want. Sometimes this scenario seems like alarmism, particularly of educators fearful of losing students, or concerned that their carefully planned programs are being trashed by student practices, and the reality might not match their fears. One option, therefore, is to explore the “new fluidity” empiri-

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<sup>20</sup>The only effort I know to examine IGCs and IGSs is the listing of such efforts in Wills and Lurie (1993), but this does not go beyond the attempt to describe the various industry groups that have taken this approach.

<sup>21</sup>Note that the baccalaureate degree may also be subject to the “new fluidity”; see Smith (1993) on the damage the practice of taking courses in multiple institutions causes to general education. However, the baccalaureate degree remains a sturdy image of how to provide students with extensive choice—of colleges, majors, and specific general education requirements—within an institutional structure of requirements, electives, and progression through four years or so.

cally, particularly through community case studies (see IV.5 below) which would examine the variety of education and training providers in several communities—including distance and Internet providers—to see the extent to which students move among them. In addition, it would be critical to interview a sample of students (see IV.7), to see how they are putting together their own programs. This would, of course, be complementary to interviews with students intended to determine their goals in enrolling in community colleges, and whether from the outset their intentions include gathering credits from numerous sources.

If the “new fluidity” proves to be an accurate description of the direction of PSOE, it raises questions about the appropriate role of publicly funded institutions. It’s possible that some kinds of education are best left to private providers or to distance learning and the Internet—for example, information-dense subjects for independent students. PSOE may have a different niche—for example, subjects where the integration of workshop and classroom learning is important, or where constructivist or systems approaches to teaching higher order competencies are important. But before it’s possible to say what the role of PSOE could be in the “new fluidity,” it’s important to understand better what precisely is taking place.

### ***III.3: The Limited Success of Federal Legislation***

Federal legislation related to vocational education, school-to-work programs, job training, adult education, and other aspects of work force development has had, in my view, only limited success. On the one hand, it has provided support for some good ideas—for example, the upgrading of vocational education, the integration of vocational and academic learning, the incorporation of work-based or service learning with school-based learning, the efforts to link secondary and postsecondary education, the development of yet other second-chance programs for the long-term unemployed and welfare recipients. Virtually every innovation in PSOE is funded in some way or other with federal funds, and the impact of federal funding often seems much larger than the amount—“the tail wags the dog,” in the conventional expression. On the other hand, the spread of these practices has been slow, partial, and incomplete. A great deal of federal funding for occupational education is spent for routine forms of program improvement—for example, upgrading equipment and courses, which is something that occupational programs ought to be doing routinely—and for relatively standard forms of remediation. Perkins II fostered a great deal of curriculum integration, but largely in the form of applied academics courses—the most pallid form of integrating academic and vocational education. Tech prep and school-to-work funds have been used to support bits and pieces of good practice—some articulation agreements, some additional guidance and counseling, some applied academics courses—but without doing much to create coherent systems with widespread participation (Hershey, Silverberg, Owens, and Hulsey 1998; Hershey et al. 1998).

Before examining the final question of what the federal government should do in PSOE, in the next section, it's important to raise the issue of why federal legislation in this arena has been so checkered in its effects—or, more precisely, to see whether there's some empirical research that might shed some light on this issue. There are several hypotheses and fruitful avenues for research:

- Many occupational educators report that state and local funding is simply inadequate for their programs, since there is (in most states) no recognition of the higher costs of certain occupational courses, of the special equipment and materials costs, and of the ancillary costs of establishing connections with employers including work-based placements. Therefore they have to scrounge for every additional dollar they can find, and federal funds are used in these ways too. The implication is that in states that do have funding for the higher costs of occupational programs, and routinized funding for capital equipment, it might be possible that federal funds are used in different ways.
- The amount of federal funding in most PSOE institutions is very small—a dated estimate is that perhaps one to three percent of overall funding in community colleges, or two to four percent of funding for occupational education come from federal sources (Grubb and Stern 1989). With such small amounts of funding, programs cannot commit themselves to larger changes that require state and local funding—and so federal funds are used for “bits and pieces” of programs, not coherent system changes. One implication is that programs that receive relatively larger amounts of federal funding may use them in distinctly different ways.
- Outside funds are often viewed differently than internal funds, since they may disappear, or have separate regulations attached to them that require administrators to keep them separate, or have participation and allocation requirements different from other funds. This usually means that outside funds are reserved for relatively peripheral activities rather than being integrated into mainstream programs.

These hypotheses, and others that could be generated through discussions with federal and local administrators, could be investigated by examining spending patterns and through interviews with local administrators. Some of these questions could be integrated into questionnaires or interviews with state directors of PSOE (see IV.2) and into questionnaire studies and case studies (IV.3 and IV.4) of local providers. Alternatively, it might be possible to identify some PSOE institutions that have used federal funds in distinctly different ways, and then identify what conditions of these institutions have influenced this difference.

This question is, of course, much larger than federal legislation for occupational education and related programs. Many federal programs—and indeed most state programs—intended to enhance the effectiveness of social programs including education have been faulted for low effectiveness in instigating reform. However, before deciding what future directions for policy might

be, it is crucial to establish when federal legislation has been effective and when its influence has been only marginal.

### ***III.4: What Should Federal PSOE Policy Be?***

The culminating question, the one that in many ways motivates all the research that NAVE carries out, is what PSOE policy might be, and whether it should take a new direction in legislation subsequent to Perkins III. The question here is not what this direction might be, but whether there are research activities that might help determine the options for federal policy.

There are at least five activities that might be helpful in addressing this question:

- A review of the principles of fiscal federalism, which specifies when a federal government might provide goods and services and when a state or local government is more appropriate.<sup>22</sup> Some understanding of the strengths and weakness of state policy in PSOE, from IV.3 above, might be useful in this exercise.
- A review of the principles and results of federal legislation in other areas of education and job training, including the effectiveness of such policies. For example, policy in K–12 education has tended to provide funding through categorical programs like Title I rather than through student funding as in postsecondary policy.
- An analysis of other countries and their efforts to create PSOE policies might be useful, particularly if the examination concentrated on countries reasonably like our own—for example, Australia with its federalist system, Great Britain with its free-market approaches—rather than countries like Germany and Japan with very different institutional and government histories.
- A consensus-generating exercise might be useful, bringing together a variety of federal, state, and local administrators and policymakers, to identify the current strengths and weaknesses of different levels of government. This exercise might start, for example, with a paper outlining a broad array of options for federal policy—or for a joint conception of federal and state policy—based on other activities, and then have participants weigh the alternatives from a variety of perspectives.
- All NAVE contractors could be required to include a section on implications for federal policy at the end of their reports. This will at least force individuals to question what potential implications there might be of the very different kinds of information they collect.

In general, these activities seem pallid in comparison with the task of specifying new directions for federal policy. This is perhaps because the broad outlines of policy are not usually created from rational exercises like this, but rather from a more extended process of discussion,

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<sup>22</sup>A now-dated effort to do this was undertaken for the NAVE in the late eighties, together with a section on the options for federal legislation; see Grubb and Stern (1999).

debate, and consensus.<sup>23</sup> However, because there has been so little explicit thought given to what federal policy in the arena of PSOE should be, NAVE could at least begin the discussion through the activities I have outlined.

#### **IV. Research Activities**

The issues I have raised so far do not always constitute well-defined research activities; rather, they are questions that need to be answered through various kinds of information. In this section I briefly outline the kinds of research implied by the three previous sections, the issues each kind of research could address, and some of the major problems in designing the research. The detailed designs for research must await another time and place.

In considering the research that NAVE can undertake, its timetable must be carefully considered. If NAVE is to report to Congress by July 2002, and requires the first half of 2002 to evaluate all its findings, and if researchers therefore need to complete their reports by the end of 2001 and require the fall of that year for writing, then *at best* data collection can take place between summer of 1999 and summer of 2001. But interim state plans were due in April 1999, and many states will not have definitive plans until April 2000; the school year 2000–2001 will be, in effect, the first school year under Perkins III, though it will be the last year of data collection for NAVE. Therefore research on changes that Perkins III has introduced—particularly those having to do with accountability—must rely on plans and perceptions rather than steps already undertaken. Similarly, the participation of PSOE institutions with WIA and adult education must rely on reports of early planning stages, since WIA need not be implemented until July 1, 2000. Fortunately, this timing problem is largely confined to accountability and WIA since in other important issues—the other issues related to Perkins III in Section I, the larger issues of effectiveness in Section II, and the other topics raised in Section III—are relatively enduring ones, where the questions have been relatively stable all during the 1990s.

##### ***IV.1: Examining State Plans***

State plans are usually compliance-oriented documents, often containing relatively little useful information. However, they do at least describe the state performance measures and the any local indicators developed by the states, and there will be useful in examining patterns in accountability (see I.1).

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<sup>23</sup>To put the issue in different terms, the process of creating broad policy narratives is complex and not necessarily rational. See the comments in footnote 7.

## ***IV.2: Surveying or Interviewing State Directors of PSOE***

Several issues can be investigated through interviews or questionnaires directed at state directors of postsecondary education, including the nature of performance measures (I.1), the decisions on the allocation of state funds (I.4), the nature of postsecondary institutions in the states (I.5), the strengths and weaknesses of state departments with responsibility for PSOE (useful in III.3), and the normative questions of what federal policy should be (III.4). While forced-choice questionnaires are cheaper, they do not permit exploration of interesting topics. A hybrid approach would therefore be to administer questionnaires in all states, and then to choose a sample of state directors for interview. This sample could include, for example, the states corresponding to local case studies (in IV.4) and community case studies (IV.5); a sample of large states and a sample randomly chosen; or a purposive sample of states known to have strong state policies with another of states with weak policies.

## ***IV.3: Questionnaire Surveys of Local Institutions***

Many of the issues covered above require information from local community colleges and other PSOE institutions. Indeed, almost all the topics in Section I and II require information from local institutions, to ask them how they use federal funds (I.2, I.3, I.4) and what practices they now follow related to effectiveness (II.1 through II.4). In addition, the critical question of what a completer is (see III.1) can be partially answered, by asking local institutions what information they collect about student intentions and alternative credentials, and what that information reveals. Because this information will be inconsistent among institutions, however, it will be impossible to aggregate such results to the national level; instead such information will be useful primarily for determining the quality of current data and the range of responses.

Questionnaire surveys are the most efficient ways of getting such information. The questionnaires developed for the prior NAVE can be used as the basis for updated questions, in order to examine trends over time. However, because local responses are likely to be exaggerated, my recommendation is that no questionnaires be administered without case studies to check on their validity, as I propose in the next section.

## ***IV.4: Case Studies of Local Institutions***

Local case studies are more reliable because they can interview many different respondents—local PSOE administrators, PSOE instructors, administrators and faculty from the academic side (to check, for example, on the participation in curriculum integration), local interest groups like senates and unions, and students (but see IV.7). They can also examine practices

cited; for example, if a college claims to be integrating academic and occupational education in a particular way, or reshaping their curricula for tech-prep students, investigators can visit the classes and instructors to confirm these reforms. The issues to be included in local case studies include all those incorporated into the questionnaires mentioned in IV.3, including virtually all of the issues in Sections I and II. In addition, a case study should include questions about completers and noncompleters, relying on local data (see III.1), and on local perceptions of the “new fluidity” (III.2). Finally, local perceptions of state policy, a necessary component of examining responses to federal legislation (III.3), could be included in these case studies.

One way to carry out case studies is to identify a small set of community colleges and PSOE providers and carry out such studies after responses from questionnaires have been completed, so that the validity of questionnaire responses can be checked. It’s difficult to know how many such case studies are necessary, since they need to reflect the variety of urban, suburban, and rural institutions, with some other institutional variants in states that have them; perhaps 20 community colleges and 10 other types of PSOE institutions would be sufficient to generate real results.

In my view, a central component of local case studies should include classroom observations. Only through observation is it possible to determine the extent of integration of different subjects including remedial education (see I.2), for example, or the approaches to teaching of occupational faculty (see II.2). If such observations can be videotaped, then they could begin the creation of a permanent data base for better understanding teaching in community colleges and PSOE specifically. (See Stasz 1999, for a similar argument at the secondary level.)

#### ***IV.5: Community Case Studies***

Community case studies, examining all the education and training providers in a community, could be carried out for two purposes: to examine the linkages among programs (see II.4), particularly as programs begin planning for WIA; and to describe the “new fluidity” (see III.2). Communities for such case studies should be selected from the communities where local institutional case studies (IV.4) are carried out, so as not to duplicate the information collected from certain PSOE institutions. The communities selected need to vary in certain dimensions—particularly by income or unemployment rates and the composition of local employment—and such communities need to be relatively self-contained, so that it is possible to set limits on the providers who are defined as operating within the community. In prior NCRVE research, two communities in each of four states, or eight communities in all, provided a wealth of information (McDonnell and Grubb 1991; Grubb and McDonnell 1991 and 1995), and such a design might be replicated.



#### ***IV.6: Questionnaire Studies of Faculty***

The responses of PSOE faculty on questionnaires would be principally useful in identifying the methods of integrating academic and occupational education, and how widespread such practices are (see I.2); any changes in response to tech prep (I.3); the role of employers and other outside groups in setting curricula, including the role of industry-generated credentials and standards (II.2 and III.1); the approaches of instructors to pedagogy, including the question of whether local institutions play any role in helping instructors with their teaching (II.2); the interaction of instructors with support services, particularly developmental education and guidance and counseling (II.3); any influences on instructors of federally required performance measures (I.1) or other locally generated accountability standards (II.4); and faculty perceptions of the issue of completion and the “new fluidity” (III.1 and III.2). In addition, there are at least two other studies of postsecondary faculty—one supported by NCRVE (Brewer and Gray 1997) and one by the Carnegie Foundation for the Advancement of Teaching (Huber 1998), and these ought to be consulted in designing any new faculty surveys.

#### ***IV.7: Questionnaire Studies and Interviews of Students***

Questionnaires to students would be useful in ascertaining their perceptions of the value of many practices, including integration (I.2), tech prep (I.3), and student support services like guidance and counseling and remediation (II.3). However, the most critical focus for student services should be the issue of student intentions, raised in the issue of who counts as a “completer” (see III.1); and student activity in attending multiple institutions, as part of examining the “new fluidity” (III.2). Unfortunately, for these purposes questionnaires may not be sufficient, since what counts is not responses to forced-choice questions—which are likely to exaggerate—but rather the stability and precision of these plans. Therefore some student interviews should be used to check on the reliability of student questionnaire responses. Of particular value in such questionnaires would be deriving their school and work histories—that is, the different periods of work and schooling they pursue after high school, trying to determine how related and coherent—rather than fluid and unplanned—such pathways are.<sup>24</sup>

Locating samples of community college students—especially samples of central interest like noncompleters or leavers—can be quite difficult, particularly since the records community col-

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<sup>24</sup>In the interviews with students reported in Grubb (1996b, Ch. 2) I tried to collect such school and work histories, with mixed success; students don’t remember well those activities that have had little importance for them. I also tried to put together such a history of activities with the NLS72 data, which has a great deal of information both about employment and education over time. However, missing data made this virtually impossible, and I despair of using any national data set for this purpose. An alternative would be to replicate for postsecondary students the Sloan Study of Youth and Social Development, first reported in Schneider and Stevenson (1999), which followed students from sixth, eighth, tenth, and twelfth grades over a five-year period.



leges maintain may not be accurate. However, it is particularly necessary to budget in any studies of students for efforts to find fugitive students since otherwise the extent of fluidity will be under-reported.

#### ***IV.8: Questionnaire Studies of Employers***

The principal value of collecting information from employers is to learn more about their demand for PSOE (see II.1), particularly the conditions under which they hire from community colleges, the value they place on credentials including certificates and associate's degrees, licenses, and industry-generated credentials compared to other dimensions of qualifications including experience (see II.1 and III.1 on alternative credentials). An additional purpose is to determine the ways in which local institutions involve employers (see also II.1).

The issues of getting adequate response rates from employers are perhaps as difficult as they are from students, though some researchers have solved this problem (e.g., Osterman 1994). And all the problems with force-choice questionnaires are applicable here too. One alternative would be to include interviews with employers in the community case studies (IV. 5), in order to get their perspectives on the variety of programs within the community.

#### ***IV.9: Reanalyses of National Data***

As I have stated in reviewing the existing literature (Grubb 1999b), any subsequent analyses of national data ought to focus on several issues that are currently unclear: the value of small amounts of course-taking, where fields of study and student intentions need to be disentangled; the role of local labor markets and employment conditions on the returns to sub-baccalaureate education; and the timing of benefits, since it is unclear whether the employment benefits of SOE materialize relatively soon after completion or whether they take several years to develop. NAVE should first determine the appropriateness of national data sets to answering these questions before commission any further research.

#### ***IV.10: Reanalyses of State UI Data***

NAVE should consider reanalyzing the UI wage record data already collected by several states, in order to generate more sophisticated multivariate analyses. As far as I have been able to ascertain, the states with the most advanced data systems that are candidates for such reanalysis include California, Texas, Florida, and Washington; a brief investigation should be able to determine whether other states have well-developed UI data. One purpose of reanalyses is to learn

more about the conditions under which programs are effective (see II.6), and another is to provide some guidance to states in the analysis and presentation of their data.

An outlier study would begin with an analysis of one state's data, identify especially effective colleges, and then carry out local case studies (parallel to those in IV.4) to identify possible reasons for their success. A sample of perhaps three to five colleges in such a state might generate enough information, as well as adding to case study results.

#### ***IV.11: Reanalyses of Local Data***

Some community colleges have collected relatively sophisticated data on their own students and programs, and can use these data to examine the effectiveness of local practices including the integration of academic and occupational education, developmental education, tech-prep activities, and the like. The local case studies should probe for such local data, and NAVE could then either rely on local analyses or analyze local data further. These data suffer the obvious problem that they are inconsistent from college to college, and therefore cannot be used to develop state or national patterns, but they do illustrate what has been possible for local institutions.

An alternative is to conduct a more active search for such local data by using networks of institutional researchers in community colleges. In general, local data has been underutilized: many colleges collect more data than they ever examine, and even when they are analyzed the results are not widely known either inside or outside of individual colleges. One possibility would be for NAVE to fund the national organization of community college researchers, the National Council for Research and Planning, to identify local results and data sets appropriate for questions about PSOE and Perkins. This would have the added advantage of engaging institutional researchers and their organization in both federal policy and PSOE issues.

#### ***IV.12: Other Special Analyses***

The analyses outlines above each involve several distinct question. In addition, there are several single-purpose studies that need to be carried out for specific issues raised in Sections I to III. These include the following:

- a. The patterns of federal funding to PSOE through grants, loans, and tax credits is one part of the larger question of how federal funds support PSOE (see I.4). This requires data from different sources, some of which describe student aid and other (like IRS data) could help estimate the value of tax credits to PSOE.

- b. The results of alternative approaches to the sub-state allocation of Perkins funds would require a simulation model (see I.6).
- c. Identifying different types of postsecondary institutions providing PSOE would be helped by inquiring about such institutions from each state, and finding state information about purposes, enrollments, funding, and data on outcomes available.
- d. The analysis of industry-generated credentials and standards can be accomplished in part through local case studies (IV.4), surveys of PSOE faculty (IV.6), and surveys or interviews with employers (IV.8). However, these are likely to miss many types of IGCs and IGSs. An alternative is first to identify several sectors that have IGCs and IOGSs, examine the structure of these standards, and then begin to investigate their effects at the local level. For example, the automotive program standards developed by NATEF could be selected; then the relevant questions include which community colleges have adopted NATEF standards and why, which employers require NATEF standards, and whether instructors have modified their teaching in response to these standards where they are widely used. Some of these questions can be investigated through local case studies and questionnaires of faculty and employers—though such responses require a focus on automotive trades, and there are many other sectors and IGCs to investigate. In this alternative, NAVE could identify a small number of industry-generated standards—perhaps 5 to 10—and investigate their effects through special studies, rather than relying on other forms of data collection. It’s also possible that this could be done in conjunction with the National Skill Standards Board. This would help understand the changing conditions of PSOE and help in defining who “completers” are. In addition, a better understanding of the conditions under which employer-driven skill standards emerge and thrive could government groups like the NSSB understand how to create other kinds of skill standards.
- e. Each of the support services identified in Section II.3 merits its own analysis. While each of them can to some extent be addressed through questionnaires (IV.3) and local case studies (see IV.4), and while student surveys (IV.7) can generate other information on the use and usefulness of existing services, these approaches won’t generate much information if, for example, the institutions selected for case studies don’t happen to have interesting approaches to remediation or counseling. An alternative approach would be to supplement information from case studies and questionnaires—which yield information on the scope of conventional practices—with a more concerted effort to identify conceptions and instances of good practice for each of these support services.

- f. Finally, the ultimate question posed in Section III.4—the issue of what the federal role in PSOE could be—would certainly benefit from various studies including the analysis of what the effects of Perkins III have been (the topics in Section I), but it also requires several distinct activities. The development of an options paper based on consideration of fiscal federalism and the history of other federal programs is one, for example; a consensus-generating meeting would be another; international comparisons might also be valuable and they are quite different from any of the research activities presented so far. Thus NAVE should consider supporting several activities specifically to address this difficult normative question.

## **V. Some Priorities: A Personal View**

In this review of PSOE research, I have presented far too many topics for NAVE to support over the next three years. I presume that the process of selecting topics will be one in which the Independent Advisory Panel and others within government choose among these topics based on their own conception of what NAVE should accomplish and which issues are most important. And I hope that other topics can become part of a broader agenda on PSOE that can be carried out by OERI and its grants program, by the National Center on Postsecondary Improvement sponsored by OERI, by the new National Center for Research in Vocational Education, and by other federal and state research efforts.

However, I also offer my own priorities, with some brief justification. In rough order they are as follows:

1. NAVE needs to assess a few practices supported by Perkins to determine how effective they have been. These include the current development of accountability and performance measures, and the efforts to broaden PSOE by requiring the incorporation and integration of academic competencies.<sup>25</sup> In contrast, I see no reason to study tech prep yet one more time; the findings aren't going to change. In examining these Perkins requirements, questionnaire surveys to local officials are pointless without case studies to help interpret them, so I would recommend more case studies and a shorter general questionnaire rather than relying (as the previous NAVE did) wholly on long, multi-part questionnaires.
2. No doubt NAVE must consider the question of where the money goes (see I.4). But this is a relatively uninformative counting exercise without some kind of context about

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<sup>25</sup>The allowance of “all aspects of the industry” is part of developing a broader conception of occupational education and should be included here.

the alternative resources available. Therefore, this exercise should be accompanied by (a) a fuller effort to determine where other sources of federal funds go, and why (if I am right) there are proportionately so few of them in community colleges and other sub-baccalaureate institutions; and (b) determining how the patterns of state resources affect the process of allocating federal funds (from III.3).

3. The study of who counts as a completer is among the most critical issues facing PSOE, and involves both student issues and the apparent growth of new kinds of credentials, including licenses and industry-generated credentials. This ought to be a high priority for NAVE; several of the specific research activities undertaken for this, including surveys and interviews with students, will shed light on other questions including elements of the “new fluidity.”
4. There are at least two powerful reasons to undertake a limited number of community case studies: to understand the planning now taking place with WIA, welfare, and other work force development programs (see II.5 on linkages with other programs); and to identify the institutions and the issues involved in the “new fluidity” (III.2). Thus a nested design of questionnaires to a large number of PSOE providers, a smaller number of local case studies, and a still smaller number of community case studies would address a large number of issues.
5. Of the multiple dimensions of effective practice I presented in Section II, several will be covered in research I have already outlined: the nature of licenses and industry-generated credentials in examining the issue of completers, the use of data in analyzing accountability, and linkages to other programs in community case studies. For me, the are two other major candidates for NAVE research in this section: the pedagogy of PSOE (including the pedagogy of work-based learning), since this topic has been so rarely addressed; and further analysis of state UI data systems, including the possibility of an outlier study.
6. The final question—what the federal role in PSOE should be—might be undertaken by NAVE staff, but certain supporting activities—particularly an issues and options paper, and a consensus-generating activity with various constituencies present—would be helpful in formulating the alternatives.

The issues surrounding PSOE—including the need for greater visibility and stature, the requirements for additional research, and the development of a compelling vision for federal policy—are much larger than a single research exercise like NAVE can address. But NAVE can at least help define what these issues are, and therefore help create an agenda for the twenty-first century.

## References

- Achtenhagen, F., and Grubb, W.N. Forthcoming. "Vocational and Occupational Education: Pedagogical Complexity, Institutional Indifference." In *Handbook of Research on Teaching*. 4th ed. Ed. V. Richardson. Washington, DC: American Educational Research Association.
- Badway, N. 1998. *The Politics of Compliance: Federal Policy for Curriculum Reform in Community Colleges*. Ph.D. dissertation, University of California, Berkeley.
- Beatty-Guenther, P. 1994. *Retention Strategies at Community Colleges: Diffusion, Legitimacy, and Effectiveness*. Ph.D. dissertation, Berkeley: School of Education, University of California, Berkeley.
- Bragg, D. 1996. *Perspectives of Urban Educators, Students, and Employers Toward Tech Prep Student Outcomes*. Berkeley: National Center for Research in Vocational Education.
- Bragg, D., Layton, J., and Hammons, F. September 1994. *Tech Prep Implementation in the United States: Promising Trends and Lingering Challenges*. Berkeley: National Center for Research in Vocational Education, University of California.
- Bragg, D., Hamm, R., and Tinkle, K. 1995. *Work-Based Learning in Two-Year Colleges in the United States*. Berkeley: National Center for Research in Vocational Education, University of California.
- Brewer, D., and Gray, M. October 1997. *Connecting College and Community in the New Economy? An Analysis of Community College Faculty-Labor Market Linkages*. MDS-1084. Berkeley: National Center for Research in Vocational Education, University of California.
- Cohen, A.M., and Brawer, F.B. 1989. *The American Community College*. 2nd ed. San Francisco: Jossey-Bass.
- Committee for Economic Development. 1985. *Investing in Our Children: Business and the Public Schools*. New York: Author.
- Dougherty, K. 1994. *The Contradictory College: The Conflicting Origins, Impacts, and Futures of the Community College*. Albany: State University of New York Press.
- Grubb, W.N. 1996a. *Learning to Work: The Case for Re-Integrating Job Training and Education*. New York: Russell Sage Foundation.

- Grubb, W.N. 1996b. *Working in the Middle: Strengthening Education and Training for the Mid-Skilled Labor Force*. San Francisco: Jossey-Bass.
- Grubb, W.N. 1997. "The Returns to Education in the Sub-Baccalaureate Labor Market, 1984–1990." *Economics of Education Review* 16 (3), 231–246.
- Grubb, W.N. February 1999. *Lessons from Education and Training for Youth: Five Precepts*. Paper presented at the OECD Conference on "Preparing Youth for the 21st Century: Policy Lessons from the Past Two Decades," Washington, DC.
- Grubb, W.N. Forthcoming. *Learning and Earning in the Middle: The Economic Benefits of Sub-Baccalaureate Education*. New York: Community College Research Center, Teachers College, Columbia University.
- Grubb, W.N., and Associates. 1999. *Honored But Invisible: An Inside Look at Teaching in Community Colleges*. New York and London: Routledge.
- Grubb, W.N., Badway, N., Bell, D., and Kraskouskas, E. 1996. *Community College Innovation in Workforce Preparation: Curriculum Integration and Tech Prep*. Mission Viejo, CA and Berkeley: League for Innovation in the Community College, NCRVE, and National Council for Occupational Education.
- Grubb, W.N., Badway, N., Bell, D., King, C., Herr, J., Prince, H., Kazis, R., Hicks, L., and Taylor, J. 1999. *Toward Order From Chaos: State Efforts to Reform Workforce Development Systems*. Berkeley, CA: National Center for Research in Vocational Education.
- Grubb, W.N., and Kalman, J. November 1994. "Relearning to Earn: The Role of Remediation in Vocational Education and Job Training." *American Journal of Education* 103 (1): 54–93.
- Grubb, W.N., and Kraskouskas, E. 1992. *A Time to Every Purpose: Integrating Academic and Occupational Education in Community Colleges and Technical Institutes*. Berkeley: National Center for Research in Vocational Education, University of California, Berkeley.
- Grubb, W.N., and McDonnell, L.M. 1991. *Local Systems of Vocational Education and Job Training: Diversity, Interdependence, and Effectiveness*. Santa Monica and Berkeley: RAND and National Center for Research in Vocational Education, University of California, Berkeley.



- Grubb, W.N., and McDonnell, L. 1995. "Combating Program Fragmentation: Local Systems of Vocational Education and Job Training." *Journal of Policy Analysis and Management* 15 (2): 252–270.
- Grubb, W.N., and Ryan, P. Forthcoming. *The Roles of Evaluation for Vocational Education and Training: Plain Talk on the Field of Dreams*. London and Geneva: Kogan Paul and International Labour Office.
- Grubb, W.N., and Stasz, C. September 1998; original 1993. "Integrating Academic and Vocational Education: Progress under the Carl Perkins Amendments of 1990." In *Educational Reform and Vocational Education*. Ed. A Milne. Washington DC.: Office of Educational Research and Improvement, U.S. Department of Education.
- Grubb, W.N., and Stern, D. January 1989. "Long Time A Comin': Options for Federal Financing of Postsecondary Vocational Education." Unpublished manuscript, National Assessment of Vocational Education. Berkeley: School of Education, University of California, Berkeley.
- Grubb, W.N., and Tuma, J. Spring 1991. "Who Gets Student Aid? Variations in Access to Aid." *Review of Higher Education* 14 (3): 359–381.
- Harris, N.C., and Grede, J.F. 1977. *Career Education and Colleges: A Guide for Planning Two- and Four-Year Occupational Programs for Successful Employment*. San Francisco: Jossey-Bass.
- Hershey, A., Silverberg, M., Haimson, J., Hudis, P., and Jackson, R. September 1998. *Expanding Options for Students: Report to Congress on the National Evaluation of the School-to-Work Implementation*. Princeton, NJ: Mathematica Policy Research.
- Hershey, A., Silverberg, M., Owens, T., and Hulsey, L. 1998. *Focus for the Future: The Final Report of the National Tech-Prep Evaluation*. Princeton, NJ: Mathematica Policy Research.
- Hollinger, D., and Harvey, J. July 1994. "Coordinating Vocational Education and Federal Job-training Programs." In *Final Report to Congress: Vol. 1. Funding and Administration Issues*. Eds. L. Muraskin, D. Hollinger, and J. Harvey. Washington, DC: U.S. Department of Education.
- Huber, M. 1998. *Community College Faculty Attitudes and Trends, 1997*. Menlo Park: Carnegie Foundation for the Advancement of Teaching.



- King, C., Lawson, L., Olson, J., Trott, C., and Baj, J. 1998. "Training Success Stories for Adults and Out-of-School Youth: Past Effects and Lessons for the Future." In *Improving the Odds: Increasing the Effectiveness of Publicly-Funded Training*. Eds. Burt Barnow and Christopher King. Washington D.C.: Urban Institute Press, forthcoming.
- Mayer, D.P. Spring 1999. "Measuring Instructional Practices: Can Policymakers Trust Survey Data?" *Educational Evaluation and Policy Analysis* 21 (1): 29–46.
- McDonnell, L., and Grubb, W.N. April 1991. *Education and Training for Work: The Policy Instruments and the Institutions*. Berkeley and Santa Monica, CA: National Center for Research in Vocational Education and the RAND Corporation.
- Osterman, P. 1994. "How Common is Workplace Transformation and Who Adopts It?" *Industrial and Labor Relations Review* 47 (2): 173–188.
- Perrin, D. September 1998. *Curriculum and Pedagogy to Integrate Occupational and Academic Instruction in the Community College: Implications for Faculty Development*. Occasional Paper. New York: Community College Research Center, Teachers College, Columbia University.
- Pinsky, R. 1994. *The Inferno of Dante*. New York: Farrar, Straus, and Giroux.
- Richardson, R.C., Jr., Fisk, E.C., and Okun, M.A. 1983. *Literacy in the Open-Access College*. San Francisco: Jossey-Bass.
- Roe, E. 1994. *Narrative Policy Analysis: Theory and Practice*. Durham, NC, and London: Duke University Press.
- Schneider, B., and Stevenson, D. 1999. *The Ambitious Generation: America's Teenagers, Motivated But Directionless*. New Haven: Yale University Press.
- Smith, V. June 1993. "Phantom Students: Student Mobility and General Education." *AAHE Bulletin* 45 (10): 10–13, 7.
- Stasz, C. May 1999. *Assessing the Quality of Vocational Education in High Schools*. Paper presented at the meeting of the Independent Advisory Panel, National Assessment of Vocational Education, Washington, DC.

Tuma, J. April 1993. *Patterns of Enrollment in Postsecondary Vocational and Academic Education*. Prepared for the National Assessment of Vocational Education. Berkeley, CA: MPR Associates, Inc.

Walker G. June 1997. "Out of School and Unemployed: Principles for More Effective Policies and Programs." In *A Generation of Challenge: Pathways to Success for Urban Youth*. A. Sum et al. (Policy Issues Monograph 97-03), pp. 73–86. Baltimore: Sar Levitan Center for Social Policy Studies.

Wills, J.L., and Lurie, I. 1993. *Industry-Driven Skill Standards Systems in the United States Vol. III*. Washington, DC: Institute for Educational Leadership, Center for Workforce Development.