

Efforts to Improve the Quality of Vocational Education in Secondary Schools: Impact of Federal and State Policies

Cathleen Stasz*
Susan Bodilly*

With the Assistance of
Sarah Remes*
Tammi Oyadomari-Chun*
Daniel McCaffrey*
Tessa Kaganoff*
Dionne Barnes*

*RAND Corporation

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Executive Summary

The National Assessment of Vocational Education — a congressionally-mandated study — is charged with evaluating the impact of the Carl D. Perkins Vocational and Technical Education Act of 1998, known as Perkins III, and preparing a report to Congress by July 2002. As part of that effort, the National Assessment of Vocational Education commissioned RAND to conduct a study to assess the quality of vocational education in the United States. The purpose of the study is twofold. It will provide evidence on the extent to which actual practice is consistent with legislative and other views of what constitutes “quality” practice in secondary vocational education. It also will provide evidence regarding how policies made at different levels of the education system enhance or impede implementation of quality practice. RAND’s findings as described in this report provide some of the information NAVE needs to evaluate the impact of the Perkins Act and prepare its report to Congress. They also yield lessons for the larger vocational education community by identifying strategies that can be adopted by schools, communities and states to improve the quality of vocational education programs.

Vocational and technical education is defined in Public Law 105-332 as organized educational activities that individuals need to prepare for further education and for careers requiring less than a baccalaureate degree. The educational activities are to offer a sequence of courses that provide individuals the necessary academic and technical knowledge and skills and to include competency-based applied learning. Federal funding for vocational education commenced with the passage of the Smith-Hughes Act in 1917, and since that time federal legislation has sought to shape vocational education in specific ways. Vocational education, like all education in the United States, has traditionally been the domain of states and local communities. The federal government plays an important role in education through its leadership and funding, but the vocational education “system” has no national standards or curriculum.

Over time, federal legislation has attempted to expand influence over state vocational education programs. Perkins III offered specific guidance on the kinds of improvements that a program should incorporate to enhance its quality. These improvements included

- integrating academics into vocational and technical studies;
- adopting challenging academic, vocational and technical standards;
- promoting understanding of “all aspects” of an industry;
- encouraging parent and employer involvement;
- building linkages to postsecondary education;
- expanding use of technology; and

- providing for professional development of teachers, counselors and administrators.

Importantly, Perkins III incorporated stronger accountability measures than previous legislation did. States now must develop and track four core performance indicators and meet specific performance targets. Federal funds can be withheld from states that fail to meet their targets.

Perkins III was signed into law on Oct. 31, 1998 and took effect in program year 2000, from July 1, 1999 through Sept. 30, 2000. Thus, it was in effect for less than one year when this study began. States in this study opted to use the last state plan submitted under Perkins II as a transition plan with only minimal changes. New state plans were submitted during the course of the study, but most were not implemented until the second program year, July 1, 2000–Sept. 30, 2001, after Perkins III was enacted.

The study noted three limitations at the outset: little time has passed to allow for full implementation of Perkins III or for its accountability measures to take effect; the reform emphasis in secondary schools is on higher academic standards and performance; and the federal resources are relatively small compared with state funding. Thus, the incentives to implement Perkins-related reforms are weak relative to reforms associated with other state or local policies.

Within this context, the study aimed to understand the extent to which the quality improvements identified in Perkins were being implemented and whether the new provisions in Perkins III were encouraging stronger implementation of the federal vision for vocational education.

Study Questions

This study of secondary school vocational education assessed the status of Perkins III at an early stage of implementation and the current quality of vocational offerings through five broad questions:

1. What are the purposes and philosophies of vocational education in secondary schools? Have these evolved in keeping with the Perkins legislation, and how do they differ among states?
2. What other education reforms are occurring, and how have these affected vocational and technical education within states and localities? What is the influence of federal and state policies at the local level?
3. What are the state and local efforts to improve the quality of vocational education, especially with respect to the quality improvements outlined in Perkins III? Does the implementation incorporate challenging academic and technical standards? How prevalent are the practices endorsed by Perkins, and do they differ for academic and vocational teachers and schools?

4. What is the impact of changes in Perkins III on special populations and other groups and the programs that serve them? Have changes at the state level affected service delivery at the local level?
5. What are the characteristics of Tech-Prep programs? Are the states' visions for Tech-Prep reflected in local practice?

Approach and Methods

The research proceeded along two strands: case studies of implementation on a selected sample of sites and a national probability survey of high school teachers.

The case studies for the secondary school study included seven states and a purposive sample of four districts and schools within each. The seven states — California, Florida, Massachusetts, Michigan, North Carolina, Ohio and Texas — were purposely selected for several reasons: each has a data system in place that provides accessible information about student achievement; for at least the school level; each had sufficient vocational program offerings; and overall the group balanced the need for geographic and demographic diversity.

Four school sites were randomly selected from a pool within each state that had either high or low student achievement relative to other schools in the state, after adjusting for the demographics of the students. The two high-achieving and low-achieving schools in each state also had vocational education enrollment that exceeded the state's median enrollment. As a whole, the schools balanced the need for geographic diversity, levels of population concentration/locale, and different types of vocational schools. The selection of schools that varied by student achievement was intended to shed light on the relationship between achievement and vocational education implementation — i.e., whether higher- and lower-achieving schools differed in their efforts to enhance the quality of vocational education. This selection method was imperfect, however, and this aspect of the analysis was not very informative.

The case studies were carried out from February through June 2001 and gathered descriptive information about the quality of vocational programs in the states, districts and schools using multiple data-gathering methods, such as interviews, focus groups and document analysis.

At the same time, RAND conducted a nationally-representative survey of teachers in comprehensive high schools and vocational schools. The survey was designed to examine whether the instructional, curricular and related activities in schools and classrooms correspond to quality practices as defined in the federal legislation. It also gathered information about teachers' backgrounds and their school and teaching environments. This report includes selected findings from the teacher survey where they inform the main study questions.

To assess the relative quality of vocational education programs at the study sites, the research team developed a set of quality indicators for selected program improvements

discussed in Perkins III. These indicators were based on scholarly and policy research and studies of practices and were used to develop the interview guidelines and teacher survey and to interpret the study data.

In addition to the limitations in Perkins III noted above, the case-study findings are limited to the states and localities in the study sample. The teacher-survey findings reflect teacher reports on their schools, students, and teaching and curricular practices. Although the survey was designed to gather information on the prevalence of practices discussed in the legislation, it did not directly ask about Perkins III or its implementation.

With these caveats in mind, the following sections present findings organized by chapter.

Reactions to Perkins III Specifications

Perkins III brought some policy changes intended to provide more flexibility to states and local grantees but also to hold them more accountable for their actions. Three specific types of changes concern Perkins funding, accountability and services to special populations and other groups.

State and local education agencies directed funds in line with legislative intent. Perkins funds were crucial for supporting technology-related activities at the local level.

Perkins III specified both allowable and required use of funds and also changed the allocation of funds so that a larger proportion went directly to local districts, from 75 percent to 85 percent of the total state allocation.

State expenditure of leadership funds was directed primarily at three areas: curriculum development and dissemination, professional development of vocational education teachers, and development of standards and assessments.

At the local level expenditures also appeared to be in line with legislative intent. Perkins funds were particularly crucial for supporting technology-related activities – equipment, software, Internet support and the like. However, the flexibility in Perkins also permitted states and local grantees latitude, which allowed for considerable variation in spending patterns across the study sites.

Accountability mechanisms in Perkins III were not yet in place.

The states in this study were in the first year of implementing their state plans and accountability systems at the time of the field study. They varied in their ability to comply with the reporting requirements of Perkins III. Most state data systems were still incomplete, although states that developed standards and measures in response to Perkins II were more prepared to comply than others were.

Few local sites had changed their data collection as a result of Perkins, although many reported changes to comply with state data collection requirements.

It is simply too soon to tell whether the accountability measures adopted in Perkins III will exert greater control over state and local expenditures and efforts.

The elimination of set-asides to fund activities in support of students from certain groups reduced staff dedicated to these students. The full impact of changes is not yet known.

Perkins III amended the definition of special populations but also eliminated the set-asides to fund activities in support of students from certain groups. While the latter change was intended to provide greater flexibility at the local level, it also raised questions about how services might be affected. Perkins III also required states to provide separate reports on the performance of students from special populations and to report on participation in programs leading to nontraditional employment.

Five of the seven states made reductions in state-level gender-equity staff — and sometimes other positions — as a result of the elimination of the set-aside.

Although a few local sites seemed pleased with the flexibility afforded in Perkins III, most reported possible negative effects, including staff reductions.

The study revealed a complex picture concerning participation and access. Four states had differentiated programs of study or alternative requirements for some students. In some cases, these requirements had improved services for students at the local level, but in others they isolated students or reduced their access to the highest-quality programs.

Respondents in the case studies and teacher survey indicated that vocational education programs enrolled a disproportionate share of students from special population groups — a perception that the study is unable to verify with the data at hand. It is certainly the case that in some localities vocational education was still perceived as the educational alternative for the academically less able.

The State Context for Efforts to Improve Vocational Education

Perkins III is implemented in the context of existing state and local education systems. This study examined three aspects of state context that can shape efforts to reform vocational education: education philosophy or vision, the structure and delivery system for vocational education, and the current and ongoing state education reforms, including those that affect vocational education.

States and localities embraced the broader vision of vocational education but faced significant challenges to achieving this vision.

Since the 1990s, the Perkins legislation advanced a broader and more flexible vision of vocational education that expanded the content to include academic and industry stan-

dards to a level that would prepare students for postsecondary education or for high-skill, high-wage careers. It also expanded the audience for vocational education to include students who might otherwise only follow a general or college-prep program of study. The study found that while many states and localities have adopted the spirit of this philosophy – and some have enacted specific policies to advance it – many barriers to reaching this vision were evident.

Reported barriers include a negative perception of vocational education as the alternative for students who will not succeed in a more academically rigorous program; a perception by parents that it will not lead to college; a perception by employers that it will not lead to technically oriented jobs; the status of vocational education as an elective course of study in all states; and the continued separation of academic and vocational programs in high schools, where concerns over academic achievement take priority.

The structure of state education systems varied. More centralized systems were more likely to be implementing significant reforms directed at vocational education.

Unsurprisingly, states have different structures for the delivery of general and vocational education that might greatly influence their implementation strategies. In this study, we characterized states' governance structures using two simple dimensions: the number and authority of agencies involved in decisionmaking and delivery of educational services and the extent to which decisionmaking and policy is decentralized. The relative uniformity or fragmentation of policy implementation can vary with a state's structural makeup.

State structures that are characterized by having fewer agencies to authorize and deliver services and a more centralized or uniform decision-making system tended to mandate policy changes that resulted in more coherent and uniform vocational programs. Clients tended to understand the system and to move easily within it.

State structures with decentralized authority and overlapping delivery systems promoted vocational improvement through voluntary means. The result was often more variety in program offerings but less coherence.

States emphasized reforms directed toward academic standards, assessment and accountability. Similar attention to vocational education was rare.

The study examined academic and vocational reforms in three general areas: standards, increased graduation requirements and assessment. It also paid particular attention to specific state reforms directed at vocational education.

All states had academic standards for general education. These were mandatory in five states. Only three states had mandatory vocational content standards.

Four states had increased high school graduation requirements, but these requirements primarily concerned academic subjects.

All but one of the states had adopted an accountability system with high-stakes academic tests that students must pass to graduate, although not all were in effect at the time of the study. Vocational assessments were in use in three states, but these were independent of the states' accountability systems.

By and large, local respondents' reactions to academic testing regimes were somewhat negative, even in states where testing was voluntary. Respondents acknowledged that the tests had helped raise academic standards in vocational and technical programs but often at the cost of vocational learning.

State and Local Efforts to Improve the Quality of Vocational Education

Perkins III provided guidance to states to improve the quality of vocational education by outlining several program improvements — as listed above — to enhance vocational educational quality, requiring states to address these elements in their state plans, and permitting use of Perkins funds to develop them.

Overall, the study found that states, districts and schools have made progress in implementing improvements defined by Perkins III but differ in the consistency and depth of their efforts. Because state and local policies might encourage similar improvements, it is difficult to gauge the precise influence of Perkins III.

States made progress in implementing some structural changes to support vocational and academic integration, but these did not always influence local practice. Local sites had few examples of high-quality integrated curriculum.

States and local districts and schools have made some improvements in implementing some of the structural features that support integration — for example, in adopting coherent sequences of courses in vertically aligned pathways or clusters. In some cases these changes represented true reform at the local level, while in others they are labels that have been adopted without much alteration to the status quo.

Many state-level activities to support integration, such as curriculum development, professional development or adoption of whole-school reform models — for example, High Schools that Work — had not significantly or consistently influenced local practice in the sample of sites visited.

The case studies provide little evidence of widespread adoption of integrated curriculum, although each local site could point to one or two programs that appeared to contain elements indicative of integration. Survey data indicated that vocational teachers' classes incorporated more elements associated with integration than academic teachers' classes.

Vocational and academic teachers had few supports to accomplish integration. Few teachers engaged in team teaching or had common planning time to meet with other

teachers — activities associated with more successful implementation of an integrated curriculum.

The emphasis on academic reforms had helped raise academic standards in vocational education — a core performance indicator in Perkins III — but often at the expense of vocational content.

State academic standards and assessments reportedly had widespread influence over vocational courses and programs at the local level. In particular, teachers reported reduced vocational enrollments stemming from pressure to meet higher academic standards and increased course requirements; reduced time on vocational tasks arising from increased time on academic requirements and test preparation; and possible reduced quality of instruction, given the emphasis of some tests on simplistic understanding and answers.

The case studies revealed several examples of state and local efforts to enhance the academic content of vocational courses so that these can receive academic credit. A fairly high proportion of vocational teachers — 41 percent — reported on the survey that at least one of their vocational classes received academic credit.

All states and most local sites reported using national or industry certification programs or state licensure requirements as they develop vocational courses and programs, but these were not available in all areas. More than half of the local sites had courses that earned industry certification.

Survey data indicated that academic teachers were more likely to report that state and district standards were relevant to their classes, while vocational teachers were more cognizant of industry standards. Most teachers reported that standards influenced their teaching.

On a survey-derived measure of overall quality of academic and vocational teachers' classes, academic teachers had the edge over vocational teachers.

Perkins III did not appear to stimulate "All Aspects of the Industry" or parental involvement to any great extent.

Perkins III had stimulated employer involvement. Vocational teachers had more involvement with employers than academic teachers did.

All states, districts and schools were adopting strategies to involve employers in vocational programs in various ways, although some local sites were clearly more successful than others.

Survey findings indicated that vocational teachers were significantly more likely to have contact with employers than were academic teachers, even those who taught career-oriented classes.

States promoted connections to postsecondary institutions in many ways, and some were apparent in the schools. Vocational teachers had more connections with postsecondary institutions than academic teachers did.

State mechanisms to promote connections between secondary and postsecondary institutions included statewide articulation or dual-enrollment agreements, computer-based counseling programs available to all schools, adoption of reform models that emphasize such connections, policies to support career planning, or scholarships. Of these, articulation agreements, career-planning policies and scholarships appeared to have most influence locally.

Career planning was fairly common in the case-study states and localities, but according to survey reports, infrequent nationwide.

Vocational teachers reportedly had more varied and frequent connections to postsecondary faculty and institutions than academic teachers did.

Perkins was important for funding technology-related improvements at the local level. Vocational teachers had more technology support and resources than academic teachers.

Several states and schools promoted technology skill development or computer literacy for all students, including vocational students.

About half of the local sites featured more high-tech programs to reflect new demands in the workplace, although few of these were cutting-edge. Instructional activities involving distance learning were rare.

Academic teachers were more likely than vocational teachers to report problems with technology availability and quality and reported being less prepared to teach technology-related skills.

All states supported professional development for teachers but had not provided the same level of support for counselors or administrators.

All states in the study promoted teacher professional development, but local support varied considerably.

Survey data indicated that academic teachers received more professional development on topics related to assessment, while vocational teachers received more on integration-related or vocational themes. About three-fourths of all teachers surveyed received professional development on academic standards, subject-matter content and technology.

Some states had lateral entry policies to promote vocational teacher certification. Most states and some local sites were also concerned about vocational teacher shortages, but few had data to support their concerns.

Impact of Tech-Prep and Related Federal Policies

Federal policy also intended to improve or support vocational education through Tech-Prep, the School-to-Work Opportunities Act of 1994 and the Workforce Investment Act . Tech-Prep is incorporated into Perkins III as a separate title and provides funds to create programs that will lead to attainment of an associate's degree at a community college and preparation for high-demand, technically-oriented occupations.

Only two states had structured, comprehensive tech-prep programs.

Only two states in this study had structured and comprehensive programs. In the other states, Tech-Prep programs had some identifiable characteristics, such as articulation agreements, but it was difficult to distinguish Tech-Prep courses or students from regular vocational education.

Some states also had statewide articulation agreements or dual-enrollment policies between high schools and community colleges. These policies, however, did not always enhance or support Tech-Prep as defined in Perkins.

School-to-Work has had some impact on vocational programs, but the Workforce Investment Act has had little influence.

Four of the seven states used School-to-Work funds to advance certain aspects of their vocational education programs. Respondents at nearly all the local sites in these states reported that programs begun under STW had become institutionalized and were continuing with local or state funding.

The Workforce Investment Act, on the other hand, has had minimal effect at the secondary school level in most states or local districts and schools. This is not very surprising because WIA is geared toward adult and postsecondary education.

Conclusions and Implications

These findings led to a number of conclusions related to the study questions and also to some broader implications about federal policy for vocational education.

What are the purposes and philosophies of vocational education at the secondary level? Have these evolved in keeping with Perkins legislation?

Many states and localities have adopted the spirit of the Perkins philosophy to broaden the content of and participation in vocational education in secondary schools, and some have enacted specific policies to advance it. However, many barriers to reaching this vision remain.

Chief among these barriers is the continuing marginal position of vocational education in secondary education relative to academic or general education — a state of affairs that has been noted in many studies and for some years. The new vision has not convinced

parents that vocational education will lead to college, which is the route that most favor. The Perkins legislation may contribute to this problem by continuing to define vocational education as education for work that requires less than a baccalaureate degree.

What other education reforms are ongoing, and how have these affected vocational and technical offerings within states and localities? What is the influence of federal and state policies at the local level?

All the states in this study have adopted reforms that emphasize higher academic standards and requirements, assessment of academic learning and greater accountability, but few have adopted similar reforms for vocational education. By and large, the state reforms are highly influential, and vocational education is caught up in the academic reform tide. Although these reforms may have helped raise academic content in many vocational courses, it often appears to be at the expense of vocational or technical skills and content.

State reforms also affected local data-gathering practices. While few local sites knew about the Perkins reporting requirements, many had changed their data systems or procedures to comply with state accountability needs.

What are the state and local efforts to improve the quality of vocational education, especially with respect to the quality attributes outlined in Perkins III?

States and localities differ widely in the consistency and depth of their efforts to implement program improvements. At this early stage of implementation, Perkins appears to have had an impact on some of these efforts, but has not stimulated improvements in all areas.

Most effort has been directed at improving integration, increasing standards in vocational courses, enhancing connections to employers and postsecondary institutions, and making technology-related improvements.

Efforts at integration appeared more successful at the structural level than at the curricular level. The case studies provide little evidence of widespread adoption of integrated curriculum within a school. Teachers do not receive the support needed to implement curriculum integration, such as common planning time during the school day. The survey indicated that vocational teachers' practices are much more in sync with the notion of integration than are academic teachers' practices.

In some localities, the state reforms directed much attention to improving academic rigor in vocational education. Similar efforts to improve technical rigor in vocational courses were less evident, although local use of industry standards was fairly commonplace in vocational programs and many programs attained industry certification.

Connections to employers are fairly typical in vocational programs — the case studies provided many examples of employer involvement in local programs. Vocational teachers have much stronger connections to employers than academic teachers do, and

they also have stronger connections to postsecondary institutions. The latter may stem partly from Perkins' support of Tech-Prep, which incorporates creation of articulation agreements between secondary schools and postsecondary institutions.

Perkins appears to play a crucial role in supporting technology needs associated with vocational programs. At the local level in particular, Perkins funds make a significant contribution. Although teachers are not always satisfied with the amount and quality of technology at their disposal, vocational teachers are much more satisfied than academic teachers are and they also feel more prepared to teach technology-related skills. Instructional practices that involve technologies are more common in vocational teachers' classes, but instruction through distance learning is infrequent.

What is the impact of changes in Perkins III on other groups and the programs that serve them? Have changes at the state level affected service delivery at the local level?

The full impact of the elimination of set-asides and other legislative changes on services to students is unknown at present. Staff devoted to serving special populations and other groups had been reduced in most of the sample states and in many localities. Although some respondents seemed pleased with the flexibility afforded in Perkins III, most reported negative effects. In addition to staffing reductions, some programs had been eliminated altogether. In a few instances, states have devoted resources to particular programs, which helped to maintain them locally.

It may prove difficult to assess the impact of legislative changes in Perkins III, as most states in this study were not yet collecting the data that complies with reporting requirements that differentiate students from special populations.

What are the characteristics of Tech-Prep programs? Are the states' visions for Tech-Prep reflected in local practice?

Data from this study suggest that Tech-Prep is conceptualized in different ways. Tech-Prep at the local level — where local consortia administer the program and act as fiscal agents — does not often reflect the state vision. Two states had structured and coherent programs, but the others varied considerably in how students and programs were defined. These findings are in keeping with prior national evaluations of Tech-Prep that noted similar issues in program implementation.

General Conclusions

The study noted at the outset that the timing of the research and some known limitations in the legislation would likely work against finding strong effects of Perkins III implementation. These initial hypotheses seemed to hold and, along with some other observations, lead to the overall conclusion that Perkins III remains a relatively weak policy instrument for implementing a strong federal vision for vocational education.

Perkins III was at an early state of implementation in the states at the time the study was conducted. Nonetheless, the study found some progress toward implementation, but individual progress varied.

As anticipated, state reforms appeared to have more influence over vocational education than did Perkins III. State policy emphasized academic achievement and accountability. Vocational education was not part of any accountability systems, even in states with vocational education standards and assessments. This influence was positive when it helped raise the academic standards in vocational education — one of the goals of Perkins III. But it also sometimes detracted from the core mission of vocational education to teach technical and career-related skills.

As anticipated, the financial incentives in Perkins III and even the stronger threat of losing Perkins funds for poor performance may not be enough to counteract the greater influence of state general-education policies. The case studies provided evidence that some states have a long way to go to be able to comply with Perkins reporting requirements.

Some implementation problems identified in the study can be attributed to state and local conditions — for example, the relative level of centralization and coherence of the state education system, the history of education reform within the state and related policies and practices already in place, and the relative importance of vocational education within the state education policy sphere. Implementation was less varied in states with more-centralized governance structures; these states also had more coherent policies directed specifically at vocational education.

A second set of barriers to implementing the Perkins' vision of an integrated academic and vocational education is the historical separation between academic and more occupationally-oriented education, which has been discussed in many studies. Vocational education and its teachers are marginalized and in the minority in most high schools, yet at the same time bear the biggest burden in making the kinds of changes required to achieve curriculum integration or other improvements.

The Perkins legislation also has some weaknesses that help create implementation challenges, which also have been documented in earlier studies. These include its origin in vocational education, which isolates the reforms from other education programs, and poor definition of key concepts, such as curriculum integration.

Like previous federal legislation for vocational education, Perkins III provided inducements to states in the expectation that states will deliver services to special groups, especially the economically disadvantaged. Like Perkins II, it incorporated capacity building mechanisms that directed funds toward specific program improvements. Perkins III added stronger mandates than prior legislation by holding states accountable for performance targets in four areas. These policy instruments were intended to reduce the slippage between policymakers' expectations and local implementation, which is expected to vary by state and local government levels.

This study found that Perkins policies were being enacted consistent with state structure, policy and interests but not necessarily consistent with federal intentions. Perkins III and concerns about vocational education are overshadowed by state academic standards and assessments and by accountability systems that often ignore vocational and technical learning. While study sites were aware of and working toward most of the quality improvements described by Perkins II and III, these efforts were largely on the margins of other state reforms.

On the positive side, Perkins funding undoubtedly plays a crucial role in state and local efforts to improve the quality of vocational education, especially in some areas. It is too soon to tell whether the stronger mandates in Perkins III accountability will have the desired effect, and some of the philosophical, structural and incentive barriers will not likely be overcome by time alone.