



State Secondary CTE Standards: *Developing a Framework out of a Patchwork of Policies*

National Research Center for
Career and Technical Education
UNIVERSITY OF MINNESOTA

**State Secondary CTE Standards:
Developing a Framework out of a Patchwork of Policies**

Marisa Castellano
University of Louisville

Linda Harrison
Sherrie Schneider
National Research Center for Career and Technical Education

October 2007

Funding Information

Project Title: National Research Center for Career and Technical Education

Grant Number: V051A990006

Act under Which
Funds Administered: Carl D. Perkins Vocational and Applied Technology of 1998
P.L. 105-332

Source of Grant: Office of Vocational and Adult Education, U.S. Department of Education
Washington, DC 20202

Grantees: National Research Center for Career and Technical Education
University of Minnesota
1954 Buford Avenue
St. Paul, Minnesota 55108-6197

Director: James R. Stone, III

Percentage of Total Grant
Financed by Federal Money: 100%

Dollar Amount of Federal
Funds for Grant: \$2,400,000

Disclaimer: The work reported herein was supported under the National Dissemination Center for Career and Technical Education, PR/Award (VO51A990004) and/or under the National Research Center for Career and Technical Education, PR/Award (VO51A990006) as administered by the Office of Vocational and Adult Education, U.S. Department of Education. However, the contents do not necessarily represent the positions or policies of the Office of Vocational and Adult Education or the U.S. Department of Education, and you should not assume endorsement by the Federal Government.

Discrimination: Title VI of the Civil Rights Act of 1964 states: “No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.” Title IX of the Education Amendment of 1972 states: “No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance.” Therefore, the National Dissemination Center for Career and Technical Education and the National Research Center for Career and Technical Education, like every program or activity receiving financial assistance from the U.S. Department of Education, must be operated in compliance with these laws.

Abstract

Many state educational administrators are currently working to define secondary career and technical education (CTE) content standards that specify the knowledge and skills students are expected to master in CTE program areas. The two-phase project on which this report is based explored (a) the progress and status of states in developing statewide secondary CTE standards systems, and (b) whether and how teachers are using those standards in their CTE courses. In 2006, an exhaustive query of CTE standards systems across the 50 states and the District of Columbia was conducted using publicly available information, validated through targeted follow-up interviews with state officials. The results include a snapshot description of each state's secondary CTE standards system as of fall 2006 and the relationship between that system and other standards systems in that state (e.g., secondary academic standards, postsecondary technical standards). For the second phase of the project, the research team selected states with well-developed statewide standards systems and interviewed state-selected CTE teachers about whether having CTE standards has changed how they teach. The results of the second phase show that these teachers welcomed CTE standards. We describe some of the ways that teachers are using these standards in their practice.

Table of Contents

Acknowledgements	ix
Executive Summary	xi
Introduction	1
Framework	1
Research Questions	5
Method	6
Phase 1	6
Phase 2	9
Overall Limitations	14
A Note on the Terminology Used in This Report	15
Phase 1 Results: Scan of State Secondary CTE Standards Systems	15
Description of Statewide Secondary CTE Standards System (<i>Question 1</i>)	15
Development of CTE Standards System and Its Review (<i>Question 2</i>)	22
Alignment of Secondary State CTE Standards System with Other State Standards (<i>Question 3</i>)	25
Connections Between CTE Standards, Program Approval, and Funding (<i>Question 4</i>)	30
Discontinuing Outdated Programs (<i>Question 5</i>)	34
Ensuring that the CTE Standards are Reflected in Practice (<i>Question 6</i>)	37
Funding for Secondary CTE (<i>Question 7</i>)	38
Phase 1 Synthesis of Results	41
Phase 2 Results: Teachers' Use of the State Secondary CTE Standards Systems	46
Nebraska	46
Ohio	46
Texas	47
Utah	47
Teacher Responses	48
Teacher Implementation of Standards	48
Presence of Standards in Curriculum	49
Professional Development in the CTE Standards	50
Effect of Standards on Instruction	50
Peer Understanding of Responsibilities for Standards	51
Effect on Student Enrollment	52
Role of CTSOs	53
Effect on Special Populations	54
Disadvantages/Challenges of Using the CTE Standards	55
Other Uses of the CTE Standards	56
Phase 2 Synthesis of Results	56
Summary and Conclusions	58
Policy Recommendations	59
Directions for Future Research	60
Conclusion	61
References	63
Appendix A. Sample Standards Across Group A and B States: Business/Marketing and Welding	65

List of Tables

Table 1	States with Statewide Standards Systems, by Census Region and State Versus Local Control	11
Table 2	Descriptive Data for Teacher Focus Group Sample, All States	12
Table 3	State Groupings with Respect to Statewide Secondary CTE Standards Systems	17
Table 4	States Sharing the Most Common Definition for Standard	20
Table 5	States that Reported Using the Typical Standards Development Process	23
Table 6	Common Governance and Procedural Issues	25
Table 7	States with Postsecondary Involvement in Secondary CTE Standards Development	26
Table 8	States with Statewide Secondary and Postsecondary CTE Standards and Their Alignment	27
Table 9	States that have Crosswalked Their Secondary Academic Standards to Their CTE Programs	29
Table 10	States with Statewide Program Approval Process for New CTE Programs	31
Table 11	States with State/Local or Local Program Approval Process for New CTE Programs	32
Table 12	States that Require CTE Standards in Order to Approve Programs	33
Table 13	States that Require CTE Program Approval in Order to Fund Programs	35
Table 14	States with Statewide, State/Local, or Local Process for Discontinuing CTE Programs	36
Table 15	Common Processes for Ensuring that the Standards are Reflected in Practice	37
Table 16	States with Ongoing State Funding for CTE	39
Table 17	Perkins Funding for States	40
Table 18	Perkins Funding: Percent to Secondary Education Agencies in States Where the Secondary Education Agency is Fiscal Manager	42
Table 19	Perkins Funding: Percent to Secondary Education Agencies in States Where the Secondary Education Agency is NOT Fiscal Manager	43
Table 20	States with Complete or Nearly Complete Statewide Standards Systems, Selected Summary	44

ACKNOWLEDGEMENTS

The authors would like to express their gratitude to the state CTE directors and other officials who participated in this project. We would also like to thank the CTE teachers in Nebraska, Ohio, Texas, and Utah who participated in our focus groups. We learned so much from you all, and we hope we have rendered that knowledge faithfully here.

EXECUTIVE SUMMARY

Many state educational administrators are currently working to define secondary career and technical education (CTE) content standards that specify the knowledge and skills students are expected to master. This development effort, analogous to the academic standards movement of the 1990s, is a necessary first step to creating curriculum frameworks and assessments for structuring and assessing student learning. The two-phase project on which this report is based explored (a) the progress and status of states in developing secondary CTE standards systems, and (b) whether and how teachers are using those standards in their CTE courses.

This paper reviews the federal legislative history that has supported the development of standards as a part of school accountability, including the *Goals 2000 Act of 1994*, which funded the creation of industry standards, and the periodic re-authorizations of the Perkins legislation that funds CTE. All of these laws strengthened the emphasis on accountability by requiring states to measure the skills and competencies of CTE students and by encouraging the development of secondary CTE standards. The latest re-authorization, the *Carl D. Perkins Career and Technical Education Act of 2006* (Perkins IV), requires local education agencies to assess CTE and academic performance on state-developed indicators.

In the first phase of this two-phase study, just prior to the passage of Perkins IV (i.e., fall 2006), an exhaustive query of CTE standards systems across the 50 states and the District of Columbia was conducted using publicly available information. This information was validated through targeted follow-up interviews with state officials. The goal of this first phase was to synthesize what was known about the secondary CTE standards system of each state.

Research Questions

The following research questions guided the first phase of the project and were examined in each state:

1. Has the state developed a system of CTE standards?
 - a. How does the state define *standards*?
 - b. How does the state operationalize its definition of *standards*?
 - c. Are there standards for all CTE programs of study?
 - d. If the system is incomplete, what are the plans for developing the remaining standards?
2. How were the existing standards developed?
 - a. What were the sources for these standards (e.g., local, state, national, industry)?
 - b. What governance and procedural issues emerged in development of these standards?
 - c. How frequently are these standards reviewed and what process is used to review them?

3. Are the CTE standards aligned with the state’s postsecondary technical standards?
4. What is the approval process for new secondary CTE programs?
 - a. Is there a statewide system or are decisions made at the local level?
 - b. What is the relationship between standards and program approval?
 - c. What is the relationship between program approval and funding?
5. How are outdated CTE programs discontinued? What factors influence this decision (e.g., enrollment, labor market considerations)?
6. How does the state ensure that the established standards are reflected in practice?
7. What state funding is available for secondary CTE programs (aside from the federal Perkins money)?
 - a. With respect to Perkins funding, how much goes to secondary education? Postsecondary education?
 - b. In your state, does a secondary or postsecondary education agency have administrative oversight of Perkins funding?

For the second phase of the project, the research team selected states with well-developed statewide CTE standards systems and interviewed CTE teachers about whether having such standards has changed how they teach. The list of teacher focus group questions follows:

1. How are you using your state’s CTE standards in your classroom teaching? What would happen if you didn’t use the standards?
2. Please tell us where in your curriculum/syllabus each standard shows up. Can you track the standard from the state list to the classroom?
3. How did you learn to integrate the standards into your teaching (e.g., online/in-person technical assistance, consultant)?
4. How are the standards affecting your classroom instruction (what is different between now and before the standards were in place)? Are there favorite pieces of your curriculum that had to go?
5. Do the other CTE teachers at your school also know that the standards are part of what they must cover in their classes?
6. Did student enrollment in CTE courses at your school change after the standards were instituted?
7. Do CTSOs (career and technical student organizations) play any part in the implementation of the standards?
8. What has been the effect of implementing these standards on English language learners and special education students?

9. What is not working regarding the standards?
10. Do you use the standards for anything other than what the state requires (e.g., teacher evaluation)?

Study Findings

The findings from this project provide a snapshot of the status of each state's secondary CTE standards system as of fall 2006. The results from the first phase indicate that there was a great deal of variability in the design of state standards systems across states, with these differences explained by each state's unique philosophies, policies, and practices, such as the locus of control of education (state vs. local) and the amount and source of secondary CTE funding.

Of the 50 states and the District of Columbia, 30 reported that they had a statewide secondary CTE standards system. These states comprised Group A. Eleven states were either in the process of developing or had partially developed such a system. These states comprised Group B. Group C consisted of 8 states that did not have a statewide CTE standards system, although they did have locally-developed CTE standards in many if not all localities. Two states did not participate in the interviews. All of the findings from the Web searches and telephone interviews are presented in these three groupings. While Group A is the main subject of this report, Groups B and C are also discussed where relevant.

Other overall results across all states include:

- Ten states had aligned their secondary and postsecondary CTE standards systems. However, most of the remaining states do not have statewide postsecondary technical standards.
- Eighteen states have crosswalked, or integrated, their specific state academic standards into CTE courses and programs.
- Nineteen states reported that they used or planned to use student assessments as a means of ensuring the implementation of the CTE standards.
- States that provided ongoing state funding for CTE were more likely to have a completed standards system.
- In these and other indicators, the states that appeared to be the furthest along in the development of a statewide CTE standards system aligned with the requirements of Perkins IV are Louisiana, Mississippi, North Carolina, Ohio, Oklahoma, Texas, and Utah.

For the second phase of the project, which explored the extent of teacher use of the standards, we interviewed state-selected teachers from four states with statewide standards systems: Nebraska, Ohio, Texas, and Utah. Teachers expressed satisfaction with the standards systems in their states. All of them reported using the standards in their classes, whether or not they were required to do so by the state.

In the focus groups, we explored the extent to which the teachers valued the standards and believed that having CTE standards was a positive development. They were well aware that having CTE standards improved rigor, credibility, and parity with academic courses. Rather than driving students away, these teachers believed that having CTE standards had attracted higher-performing students to their classes. Teachers reported having few English language learners in their classes, but noted difficulties working with special education students to meet the standards.

We asked teachers what was not working with respect to the standards. Teachers in Nebraska and Texas were concerned that the standards were not being implemented consistently, in Nebraska due to the fact that the standards were voluntary, and in Texas because of different levels of support for schools across the state. Teachers in Ohio and Utah tended to worry about having too many standards and not enough time to cover them all.

Conclusions

We found that the development of state CTE standards systems remains a work in progress. However, most states have completed or nearly-completed statewide standards systems. With respect to teacher use of the standards, the CTE teachers we spoke with welcomed CTE standards and the added credibility the standards conferred upon their programs.

Our findings suggest that there are challenges ahead as states move to implement Perkins IV. For example, few states have crosswalked their academic standards onto CTE programs, and similarly small numbers of states use technical skill assessments to measure student technical proficiency gained from CTE coursetaking. We assume that the number of states responding to these mandates will grow, but incentives might be required in order to motivate states to move away from approaches undertaken before the details of Perkins IV were available.

A major conclusion of this study was that the current system of many different CTE standards systems across the states is highly inefficient. We believe that standardizing the CTE standards could be beneficial; however, the reality is that the states have invested time and money in developing their systems. Our recommendation for the early years of Perkins IV is to monitor and help states collect valid and reliable data, examine those data, and then determine next steps. As some states are finding to be the case with academic subjects, voluntarily adopting common standards across states has benefits. Perhaps states will recognize that similar benefits may accrue if they align CTE standards across states as well. In short, many challenges remain in any effort to create a more national system of secondary CTE.

The information provided in this report may be useful to federal and state government officials interested in improving CTE by implementing standards and assessments of students against those standards. The results can inform future federal evaluation activities, provide states with information about other states' efforts and strategies, and more fully describe the CTE standards landscape for researchers in the CTE field and beyond.

INTRODUCTION

Technical skill standards for career and technical education (CTE) have long been a part of the policy discussion regarding secondary CTE. Standards are considered important for accountability because they articulate expectations for student performance. Whether focused on academic or CTE courses, standards clarify expectations for measuring student performance through a sequenced curriculum, so that students either progress to more advanced skill levels or their progression is slowed or stopped if adequate competence is not demonstrated through testing (Rahn, O’Driscoll, & Hudecki, 1999; Wills, 1993).

There has been a steady stream of standards-related legislation in education over the past few decades. Federal and state laws have helped drive the development of standards in various industries, as detailed below. This report documents the status of secondary CTE standards development across the states during the period immediately preceding the passage of the latest authorization of the federal legislation funding for CTE, the *Carl D. Perkins Career and Technical Education Act of 2006*. We report on (a) the progress and status of states in developing secondary CTE standards systems, and (b) whether and how teachers in selected states with well-developed standards systems are using those standards in their CTE courses. We begin by reviewing the legislative history of CTE and CTE standards, because federal directives have been influential in the development of CTE standards.

FRAMEWORK

Since the passage of the *Smith-Hughes Act of 1917*, the federal government has recognized the importance of CTE in our economy and our nation as a whole. As the needs of American business and industry have evolved, the Act has been revised to reflect and respond to those changes. Historically, each subsequent revision has been crafted to address the needs of business and industry. Currently, most CTE programs have evolved from traditional “shop” classes into courses that require cutting-edge technology and focus on emerging programs of study that prepare students for “high-skill, high-wage, high-demand” careers and the jobs of the future. A brief review of recent CTE-related legislation illustrates some of this evolution using the example of the development of standards.

For instance, the *Carl D. Perkins Vocational and Applied Technology Education Act of 1990*, known as Perkins II, required states to develop a “system of core standards and measures of performance for secondary and postsecondary programs that includes job or work skill attainment or enhancement, including progress in achieving occupational skills” (§115). Perkins II also delineated core indicators of performance, ranging from academic performance to job placement. One of these indicators involved technical skill proficiencies as measured by the CTE standards and assessments that the states were to develop. At that time, however, compliance with the law was limited to state reports on the progress of the development of such an accountability system.

Meanwhile, other legislation played a role in bringing standards to both academic and

CTE subjects in high school. The *Improving America's Schools Act of 1994* required states to establish academic content and performance standards and to implement assessments that measured academic achievement. This legislation came in response to a series of commissioned reports on the American economy that warned of dire economic consequences if the education and career preparation of students did not keep up with global trends (Commission on the Skills of the American Workforce, 1990; National Commission on Excellence in Education, 1983).

According to the Commission on the Skills of the American Workforce's 1990 report, *America's Choice: High Skills or Low Wages*, the nature of work and technology were changing in ways that required more judgment and responsibility on the part of front-line workers. These changes necessitated changes to the constellation of knowledge, skills, and attitudes that entry-level workers needed. This report identified the lack of clear standards in career and technical training as one of several barriers to achieving a highly skilled workforce in the U.S. Only with a strong system of standards and assessment could academic preparation, CTE, and other workforce development efforts better fit employer needs and expectations. Another influential report, *A Nation at Risk: The Imperative for Educational Reform* (National Commission on Excellence in Education, 1983), lamented the U.S. education system's inability to prepare young people for work compared to the education systems of competitor nations.

The *Goals 2000: Educate America Act* (1994) responded to these and other reports by funding the development of national standards in 22 industries. The resulting work was known as the National Skills Standards Project (NSSP). In a report profiling these 22 efforts, Rahn (1994) listed the definition of *standard* used by each industry committee. Many of the industries defined *standards* as the knowledge, skills, and attributes needed to successfully perform job tasks. Others focused on job scenarios, performance criteria, and assessment methods as means to standards. There was no uniform definition across industries at that time, and almost two decades later, that heterogeneity persists as many states implement their unique secondary CTE standards systems.

As federal funding for the NSSP ended, the project evolved into a nonprofit initiative and continued to promote standards development across industries. Spill (2002), a member of the National Skill Standards Board, wrote about nationally-recognized, industry-based skill standards and occupational certifications. He noted that standards promote certificate portability, skill transferability, worker mobility, and education and training consistency. Spill used the NSSP definition of skill standards: "performance specifications that identify the knowledge, skills, and abilities an individual needs to succeed in the workplace" (p. 3). Standards are industry-driven, determined by methodologically appropriate research or analysis, and carefully validated by employers in the region in which they are applied.

States' initial efforts to develop performance measures and standards for CTE were described by Rahn, Hoachlander, and Levesque (1992). States that had begun to develop their secondary CTE standards systems early on did so based on their unique contexts, resulting in state systems that were and remain quite different from one another (Rahn et al., 1992) By 1993, all 50 states reported that they were developing performance measures and standards for secondary

CTE, but the standards, measures, types of assessments, and approved techniques varied greatly from state to state (McCaslin & Headley, 1993).

When the next authorization of Perkins was up before Congress, many states and industries had already made strides toward developing or had completed CTE standards systems. Perkins III (the *Carl D. Perkins Vocational and Technical Education Act of 1998*) made accountability for results a central focus. The core indicators of performance had evolved into the following:

- Student attainment of challenging state-established academic, vocational, and technical skill proficiencies.
- Student attainment of a secondary school diploma or its recognized equivalent, a proficiency credential in conjunction with a secondary school diploma, or a postsecondary degree or credential.
- Placement in, retention in, and completion of postsecondary education or advanced training, placement in military service, or placement or retention in employment.
- Student participation in and completion of vocational and technical education programs that lead to nontraditional training and employment (§113).

The first core indicator implied that states had vocational and technical skill proficiencies against which to assess student attainment, but the legislation did not mandate standards per se. A few states did indeed have a system of CTE standards, but most states relied heavily on student grades, program completion rates, or skill standards developed by national industry representatives (e.g., National Skill Standards Board, 2000) to meet this requirement.

The *No Child Left Behind Act of 2001* (NCLB) called for comprehensive *academic* accountability systems in public schools; it did not address CTE. By this time, all 50 states and the District of Columbia already had some sort of academic assessment system for their K-12 schools (Goertz, Duffy, & Carlson Le Floch, 2001). Some of these systems were based on academic standards developed by the states themselves; in other cases, the standards emerged from subject-based professional organizations such as the National Council of Teachers of Mathematics (NCTM, 2000). The same thing happened in CTE: some states developed their own standards and others used national industry standards. But in either case, many states had been developing comprehensive standards systems for academic and CTE subjects for over a decade by the time the Perkins law was again up for reauthorization.

The *Carl D. Perkins Career and Technical Education Act of 2006* (hereafter Perkins IV), is important for a number of reasons. First, it further emphasized accountability and results. For the first time, the federal government required states to report on technical skill attainment using assessments aligned with industry-recognized standards where available. Student academic achievement must be measured by the academic assessments a state has approved under NCLB. Sanctions for local programs and states that fail to meet the law's requirements have become more specific. Standards are to be used as a benchmark against which to measure student aca-

demical and technical proficiency and meet the requirements of the law.

Second, Perkins IV introduced the notion of programs of study—that is, CTE course sequences that “include coherent and rigorous content aligned with challenging academic standards and relevant career and technical content in a coordinated, nonduplicative progression of courses that align secondary education with postsecondary education to adequately prepare students to succeed in postsecondary education” (§122). Programs of study are important to the development of state standards because implementing programs of study moves the field away from individual CTE courses and toward sequential, integrated CTE programs. States in the process of developing their standards systems can still develop course-level standards, but they may prefer to develop program-level standards and more closely follow the program of study model. Whatever states choose, CTE must include related academic subject matter and be aligned with postsecondary programs. This will be further discussed below.

This legislative history shows the growing importance placed on CTE standards over time. However, there is little consistency across the states regarding precisely what a CTE standard is. Sometimes standards are simply lists of tasks, while in other cases, standards provide detailed examples of actual job situations in which students must demonstrate the ability to perform. Due to the multiple definitions of *standard* across states, we have not attempted to adopt one definition for the purposes of this report.

In addition to job-specific technical tasks and situations, employers also seek workers who have met academic and employability standards, such as basic mathematics and literacy, and so-called “soft skills” including problem solving, teamwork, and taking initiative (Bailey & Merritt, 1997; Murnane & Levy, 1996; Secretary’s Commission on Achieving Necessary Skills [SCANS], 1991). Such standards were also found in many states and will be discussed briefly below.

The current drive to develop secondary CTE standards has come about as a continuation of the overall accountability movement in K-12 education. Since the 1990s, many states that were early developers of CTE standards systems have continually revised their systems to align with advances in the development of industry standards and academic accountability systems. For this reason, some of the state details reported here are likely already out of date, particularly for states that were in the process of developing their standards systems during our study. The passage of Perkins IV during the period of this research accentuated the transitory nature of our findings, because states were in flux both anticipating and then responding to new mandates.

However, this report is comprehensive and remains useful for researchers and policymakers interested in improving accountability for CTE and understanding the current status of the states in developing CTE standards systems. It documents the variety of answers to the question, what kinds of secondary CTE standards systems have the states developed?

RESEARCH QUESTIONS

The main purpose of the first phase of this two-phase study was to describe what is currently known about the secondary CTE standards system of each state. In doing this, we also sought to determine the relationship between a state's CTE standards system and other standards systems in place in that state (e.g., secondary academic standards, postsecondary technical standards). The following research questions guided the project and were examined in each state:

1. Has the state developed a system of CTE standards?
 - a. How does the state define *standards*?
 - b. How does the state operationalize its definition of *standards*?
 - c. Are there standards for all CTE programs of study?
 - d. If the system is incomplete, what are the plans for developing the remaining standards?
2. How were the existing standards developed?
 - a. What were the sources for these standards (e.g., local, state, national, industry)?
 - b. What governance and procedural issues emerged in development of these standards?
 - c. How frequently are these standards reviewed and what process is used to review them?
3. Are the CTE standards aligned with the state's postsecondary technical standards?
4. What is the approval process for new secondary CTE programs?
 - a. Is there a statewide system or are decisions made at the local level?
 - b. What is the relationship between standards and program approval?
 - c. What is the relationship between program approval and funding?
5. How are outdated CTE programs discontinued? What factors influence this decision (e.g., enrollment, labor market considerations)?
6. How does the state ensure that the established standards are reflected in practice?
7. What state funding is available for secondary CTE programs (aside from the federal Perkins money)?
 - a. With respect to Perkins funding, how much goes to secondary education?
Postsecondary education?
 - b. In your state, does a secondary or postsecondary education agency have administrative oversight of Perkins funding?

The second phase of the study examined the use of these standards systems by CTE teachers in states with well-developed standards systems. We asked our state contacts to identify up to 12 teachers to participate in focus groups. We wanted to know the level of their awareness about

and implementation of the state standards, how they had been prepared to develop and deliver a standards-based curriculum, and whether they had noticed any effects of including CTE standards in CTE courses and programs. The list of teacher focus group questions is included below.

1. How are you using your state's CTE standards in your classroom teaching? What would happen if you didn't use the standards?
2. Please tell us where in your curriculum/syllabus each standard shows up. Can you track the standard from the state list to the classroom?
3. How did you learn to integrate the standards into your teaching (e.g., online/in-person technical assistance, consultant)?
4. How are the standards affecting your classroom instruction (what is different between now and before the standards were in place)? Are there favorite pieces of your curriculum that had to go?
5. Do the other CTE teachers at your school also know that the standards are part of what they must cover in their classes?
6. Did student enrollment in CTE courses at your school change after the standards were instituted?
7. Do CTSOs (career and technical student organizations) play any part in the implementation of the standards?
8. What has been the effect of implementing these standards on English language learners and special education students?
9. What is not working regarding the standards?
10. Do you use the standards for anything other than what the state requires (e.g., teacher evaluation)?

METHOD

There were two phases to this project. The first phase involved Web searches for information, followed by telephone contacts with state officials to supplement and verify that information. The second phase built upon the first by selecting several states from among those that appeared to be far along in their CTE standards system development process. Teachers from these states were interviewed in focus groups to learn the extent to which the standards were actually being used in CTE classrooms.

Phase 1

Phase 1 Data Collection

We began by developing an interview protocol about the secondary CTE standards systems that elicited the information being sought by the study funders, the U.S. Department of

Education's Office of Vocational and Adult Education (USDE/OVAE). This protocol was approved by USDE/OVAE and became the first set of questions listed above. We then conducted Web searches of state department of education (DOE) materials for an introduction to each state's CTE standards system and for answers to as many of the seven questions as were available online. The target population consisted of the 50 states and the District of Columbia. Most states with CTE standards systems had posted the standards for each program area online. We were usually able to glean information about the state standards and answer some of the seven questions from the information on these Web sites.

An e-mail was sent to all state CTE directors describing the project and inviting them to participate. After we had exhausted the online resources for a state, we contacted the state director, either by telephone or e-mail, to set up an appointment for an interview. Some state directors referred us to other specialists in the agency or included those specialists in the interview. These interviews focused on the information still missing for each state.

Throughout the summer of 2006, the project team continued conducting Web searches of some states and conducting interviews with representatives from others. We found that each of these tasks took longer to complete than had been anticipated. Some state Web sites were straightforward, but others required multiple attempts to locate the information. Sometimes merely locating the CTE division or agency was a challenge. In some states, CTE is not a part of the K-12 state DOE: it is located in a separate agency dedicated to CTE, housed under postsecondary education, or part of the state workforce development agency.¹

Scheduling and completing the interviews was especially time-consuming. We were dependent upon the availability of the state officials, who were very often away from the office or otherwise engaged. Schedule conflicts often created delays in completing the interviews. After the passage of the new Perkins legislation (signed into law on August 12, 2006), the state contacts were understandably focused on work related to the reauthorization. Eventually we brought in extra staff to help with both the Web searches and the telephone interviews. Numerous phone calls to most of the states were required. In order to expedite the completion of Phase 1, we attended the fall meeting of the National Association of State Directors of Career and Technical Education Consortium (NASDCTEc), where we scheduled some interviews. This trip helped us gain access to the remaining states and we were able to move more quickly after it. Nevertheless, it took from March 2006 until January 2007 to fully complete the interviews with 49 states, including the District of Columbia. At that time, we concluded that despite repeated attempts, we would not be able to include the two remaining states (Alabama and New Jersey) and still analyze the data and complete the final report on time. We dropped these two states from the sample in January 2007.

Validity and Reliability of Phase 1 Data

Validation of the data collected took place in two ways. First, we compared our descrip-

¹ We will refer to the relevant agency as the DOE in the remainder of this report although we recognize the variety of agencies in which CTE is actually housed.

tion of the CTE state standards systems with the most recent literature for consistency (Klein & Charner, 2005; MPR Associates, Inc. & Academy for Educational Development, 2005). Most of the information we had gathered, however, was more recent than this literature. So we also assigned a random subset of states to more than one investigator and then compared outcomes (cf. Mechur Karp, Bailey, Hughes, & Fermin, 2005). We found only minor inconsistencies and concluded that we were collecting valid information.

The interviews with state officials served to validate and clarify the accuracy of the information found online. They provided detail and context on the actual implementation of the standards system, providing a different sort of validity. In addition to this validation, we sent a random subset of nine (18%) of the state summaries to the interviewees as a check on accuracy. While the state representatives made some changes to the summaries, we determined that none of the responses to the research questions had been incorrect, although some were incomplete or perhaps unclearly worded. One example of the kind of change that a state contact made involved the state technical endorsement that students may earn in New York. The state contact noted that we had neglected to report that in addition to passing three parts of a technical endorsement assessment (i.e., written examinations, projects, and demonstrations of technical skills), students must also pass the five Regents exams in academic areas in order to earn the New York technical endorsement.

Reliability was addressed in the beginning phases of analysis. During data collection, each of the three project team members was assigned approximately one-third of the states. During data analysis, we were each responsible for one-third of the questions. In this way, each of the team members examined certain details for all states. Inconsistencies sometimes led team members to the source of the information (either the Web site or the state contact). This process served as a reliability check.

Phase 1 Data Analysis

By the end of the data collection period, we had completed 49 of the 51 states (including the District of Columbia). Although we did not interview officials from the two remaining states, we did examine their Web sites and were able to find some general information about their secondary CTE standards systems. This information allowed us to generally categorize those two states into the classification scheme we created. But because we did not speak with any state representatives, the detailed information from the other questions remains unknown. For this reason, the sample size is 49, not 51.

The 49 states were categorized into three groups: A, B, and C. Group A (30 states) have completed or nearly-completed statewide standards systems. Group B (11 states) consists of states in the process of developing their statewide standards systems or with incomplete, unmaintained, or alternate statewide standards systems (i.e., competency lists). Our cutoff for assigning a state to Group A or B was the breadth of information available: If there were few answers to our interview questions, the system was not sufficiently developed to be in Group A. States in Group C (8 states) did not have a statewide standards systems; however, these states were not de-

void of CTE standards. In some cases, the state mandated that local agencies develop local CTE standards and in other cases, local agencies did so voluntarily. If a state had many sets of locally-developed standards, we did not gather information on all of them. Our charge was to learn about statewide standards systems.

Notes from each state's Web search and CTE personnel interview were synthesized into state summaries. We conducted a content analysis of each, yielding cross-state trends where possible. The following process was used as much as possible on the project questions. Excel spreadsheets were created for each question. The states were listed along with their response to the question. These responses were then standardized as much as possible without changing any answers. First we examined the responses to Question 1 (Which states have developed a statewide system of standards?). This question provided descriptive information on the existence and status of the state standards systems, and, once copied onto the spreadsheets for the rest of the questions, it became a major sorting tool: all of the remaining responses were first sorted by state group (i.e., A, B, or C). In some cases, the questions we asked provided important information about the larger state educational context (i.e., the amount of state and federal funding available for CTE) instead of providing specific information about CTE standards. In examining the states' responses to the research questions, we focused on the differences between each group of states. Most of these spreadsheets were then summarized. These summaries appear in this report as tables.

Phase 2

Phase 2 Data Collection and Analysis

Phase 2 also began with the development of an interview protocol to elicit the information we sought from secondary CTE teachers. This protocol was approved by USDE/OVAE and became the list of 10 questions outlined above. The proposal for this study stated that the team would select three to five states for more in-depth examination of the implementation of CTE standards at the classroom level. Utah was chosen as the pilot site for the Phase 2 focus groups with teachers because it was one of the earliest states for which we had completed data collection that had a well-developed system of standards and end-of-course assessments. The team received USDE/OVAE approval to pilot Phase 2 as we continued work on Phase 1.

Nominating States for Teacher Focus Groups

Once Phase 1 was completed for all states, our task became to nominate three to five states for the teacher focus groups of Phase 2. We considered several relevant variables in this task. First, we limited our selection to the 30 states in Group A, states that had reported having a statewide CTE standards system. We used our state summaries and other data to create a list from which USDE/OVAE would select three to five states.

In our interviews with state officials, we had asked whether the approval process for new CTE programs was a state or local decision in their state. We hypothesized that states that are

strong state-control states would be more likely to control the program approval process, whereas strong local-control states would leave such decisions to local agencies. Other elements of state-control states include site visits by state officials to monitor compliance and, in some cases, a state-determined curriculum.

We believed that local-control states might not have the mandates needed to require CTE teachers to adopt the standards, whereas state-control states should be able to mandate standards implementation more easily. We were most curious about the local-control states (there were more of these), because we wondered how the state was getting compliance from teachers on implementing the standards if the local agencies were not compelled to comply with state mandates.

Of course this distinction of state versus local control is a permeable one, and many states could fall in one category or another depending on what elements were being examined. We understood that control of the CTE program approval process was only a rough estimation of the level of state or local control, using only one narrow measure (albeit an important one for CTE). However, during our interviews, many state representatives had offered the observation that because they were “a strong local-control state,” certain things were or were not done there. So many states characterized themselves in this way that we were able to use both the narrow program approval measure and the contact’s characterization of the state to estimate the level of overall state and local control of educational decisions. We realize that some states might disagree with our characterization, but it was based on self-reported information from state officials.

In fact, we were able to estimate this global measure for all but 4 of the 30 states in Group A. We eliminated these 4, bringing our Phase 2 pool to 26 states. Table 1 lists these 26 states by state or local control and by geographic region, the next factor we took into account for this phase of the project.

As shown in Table 1, the 26 states were put into their U.S. Census region (U.S. Census Bureau, 2005). This table reflects the skew in the sample: States with standards that are state-control states tend to be located in the southern U.S., whereas states characterized as local-control states are located throughout the country.

Finally, we took into account whether or not the state provides ongoing funding for CTE. We felt that this variable was important because having a steady source of state funding could help a state create and mandate the use of CTE standards. We chose to use this variable to diversify the sample or help choose a state for nomination, all other things being equal (i.e., to choose among the local-control states in the Midwest).

This process led to the following list, which included two states from each region, with an attempt to choose one state with and one without ongoing state CTE funding: Connecticut, Delaware, Florida, Kentucky, Nebraska, New Hampshire, Ohio, Oregon, Texas, and Utah. As noted above, Utah had already been selected as our pilot.

Table 1

States with Statewide Standards Systems, by Census Region and State Versus Local Control

<i>U.S. Census Region</i>	<i>Group A States Characterized as State-Control States</i>	<i>Group A States Characterized as Local-Control States</i>
	n = 6 of 26	n = 20 of 26
South	Kentucky Louisiana Tennessee Texas Virginia	Delaware Florida Mississippi Oklahoma South Carolina
West	Utah	Arizona California Oregon Washington Wyoming
Midwest		Indiana Iowa Kansas Missouri Nebraska Ohio Wisconsin
Northeast		Connecticut New Hampshire New York

Note. The sample consisted of 26 states: that is, those Group A states that were able to be classified as being either a state- or local-control state. Group A states have complete or nearly complete statewide standards systems.

USDE/OVAE rank-ordered the list. Unfortunately, by that time, some states were extremely preoccupied with preparing their state plans for the new Perkins IV legislation and simply could not assist us by identifying teachers for us to interview. In addition, travel to many states became nearly impossible in February 2007. Severe winter storms that shut down schools for over a week in many parts of the country were partly to blame. Weeklong winter breaks precluded our visits in other cases. We were not able to conduct Phase 2 with all of the states at the top of USDE/OVAE’s list. Instead of site visits, we settled on conference calls with teachers selected and gathered by the state director or their representative, in states that were on the list and able to accommodate our schedule.

In the end, we conducted conference call teacher focus groups with CTE teachers from Nebraska, Ohio, and Texas. This was a varied sample. In Nebraska, CTE standards are not mandated, and we were able to explore why teachers would implement standards if they were not

required to do so. Ohio has a long history of having CTE standards, so there we explored how teachers become prepared to use CTE standards in a state with much experience with them. In Texas we explored CTE standards implementation in a state-control state. Again, all of the states on our list represented some interesting elements, and to a certain degree, given the time and resource limitations, any of the states on our short list would have been acceptable. These were the states that were able to comply with our tight timeline. By design, there was no attempt to represent all possible characteristics of all states.

Characteristics of Teachers in Sample

A summary of the descriptive data collected on the CTE teachers who participated in the focus groups show that of the 36 interviewees, 3 were actually administrators. Of the 33 teachers, 13 (39%) were from Nebraska, 6 (18%) from Texas, 5 (15%) from Ohio, and 9 (27%) from Utah (see Table 2). We had asked our state contacts to identify 6 teachers for two focus groups, in the hopes that we would ultimately have 4-5 teachers participating in each focus group. Some states were able to provide more teachers than others. We had asked our contacts to randomly select teachers to participate, but we did not monitor the process, and the final sample was not a random sample of CTE teachers in these states. We created focus groups to accommodate all of

Table 2
Descriptive Data for Teacher Focus Group Sample, All States

	<i>Nebraska</i>	<i>Ohio</i>	<i>Texas</i>	<i>Utah</i>	<i>TOTAL</i>	<i>National Percentages for CTE Teachers</i>
	n (%)					
Teacher Sample	13 (39)	5 (15)	6 (18)	9 (27)	33	--
Male	5 (38)	2 (40)	1 (17)	0	8 (24)	(50)
Female	8 (62)	3 (60)	5 (83)	9 (100)	25 (76)	(50)
Teaching less than 3 years	0	0	0	0	0	(13)
Teaching 3-9 years	4 (31)	2 (40)	1 (7)	2 (22)	9 (27)	(28)
Teaching 10-20 years	3 (23)	1 (20)	1 (17)	4 (44)	7 (21)	(28)
Teaching over 20 years	5 (38)	2 (40)	4 (67)	3 (33)	16 (48)	(32)
Agricultural education	5 (38)	1 (20)	0	0	6 (18)	--
Business and marketing	3 (23)	1 (20)	0	5 (56)	9 (27)	--
Family/consumer sciences	3 (23)	0	3 (50)	4 (44)	10 (30)	--
Health sciences	1 (8)	0	0	0	1 (3)	--
Information technology	1 (8)	1 (20)	0	0	2 (6)	--
Technical education	0	1 (20)	2 (33)	0	3 (9)	--
Teaching professions	0	1 (20)	1 (17)	0	2 (6)	--

Note. Some totals for years teaching do not add up to 100% because one teacher in Nebraska did not respond. The national percentages of CTE teachers in the program areas listed were not available.

the selected teachers.

The teachers represented many of the common CTE program areas: agricultural science, business and marketing education, family and consumer sciences (FACS, which includes culinary), health sciences, information technology, technical education (including manufacturing and Project Lead the Way), and teaching professions. At the time of the pilot in Utah, we planned to focus on teachers from two program areas (business and marketing education and FACS) across all states in which we interviewed teachers. However, after the pilot, we decided to get a broader perspective. We felt that we would learn more from a wider range of teachers. In addition, given the delays in Phase 1 and the limited time left to complete Phase 2, we felt that broadening the sample increased the likelihood of having enough teachers. The final sample, however, contained a preponderance of teachers from business and FACS because of the pilot.

Over three-quarters of the participants were female (76%), probably due to the skew of program areas in the sample (the program area with the largest number of participants was FACS, which is a historically female subject). Our sample does not reflect the national gender distribution for CTE teachers. According to the National Center for Education Statistics (Snyder, Dillow, & Hoffman, 2007, Table 67), CTE teachers in 2003-04 were evenly split between males and females (see Table 2). This same source also reports that most CTE teachers in 2003-04 were fairly evenly distributed across the final three categories of number of years teaching, with fewer CTE teachers in the “Less than 3 years” category (see Table 2). However, in our sample, there were no teachers who had been teaching for fewer than three years, and there was a preponderance of CTE teachers who had taught for over 20 years. Thus there is a bias in this sample toward female CTE teachers who had been teaching for over 20 years.

The Focus Group Sessions

Each focus group session was scheduled for two hours. These sessions were conducted by all three members of the research team in each case. Because we conducted all of the focus groups together, we did not conduct interrater reliability exercises on the questions. Teacher responses to questions were captured through notes and audiotapes of each session. We were able to provide a small stipend for the teachers. In Utah and Nebraska we held two focus groups, each with approximately half of the participants from each state. In Texas, we only held one focus group; likewise in Ohio.

Phase 2 Analysis

All audiotapes from the focus groups were transcribed. The focus groups yielded 246 pages of transcripts: 85 from Nebraska, 46 from Ohio, 25 from Texas, and 91 from Utah. We believe that Utah’s focus group interviews were the longest because they were the pilot—we were still refining our interview questions. Additionally, because we were there in person, the Utah focus groups lasted slightly longer than the allotted two hours. Each session was summarized individually using its notes and transcripts.

The data were analyzed in a similar manner as Phase 1 data; that is, we conducted a content analysis of each focus group and searched for common themes across focus groups and across states. Given the differing number of participants in each state, and the very different contexts, we chose not to tally responses. Instead, we highlighted where teachers (within or across states) clustered around similar responses and where responses differed across states and how those differences might reflect the policies in those states as revealed in Phase 1. We report on these teachers' experiences with CTE standards systems in the Phase 2 section of the report.

Validity and Reliability of Phase 2 Data

The states selected for Phase 2 comprised a purposive sample of states with well-developed CTE standards systems. This biased the sample towards states where teachers might have more experience using standards than if we had included all states in the sample. The 26 states nominated for this phase represented various positions within the dimensions previously described: locus of control, geography, and funding. We noted at the time that alternate states could have been substituted in some cases without harming the validity of the selection procedures. Indeed, such substitutions were made because some states were unable to participate on our timetable. All of the choices were apt because each state represented the sample in important ways. The overall lack of knowledge about how CTE teachers in any context have responded to the implementation of CTE standards meant that the data we collected would initiate a knowledge base. Our primary barriers to constructing a more comprehensive knowledge base were time and other resources.

Overall Limitations

In Phase 2, neither the selection of states nor the selection of teachers within the states was random. We asked state CTE staff to randomly select up to 12 CTE teachers for participation in this phase of the study but we did not monitor the state contact's selection process. The background characteristics of the final sample (cf. Table 2) were not representative of the national CTE teacher population. We do not know whether the group of teachers from each state was representative of CTE teachers in that state. Given a less hectic time frame in which to conduct this research (e.g., not simultaneous with the passage of Perkins IV), this limitation in sample selection could have been better addressed. As it was, we interviewed the teachers who were referred to us. We acknowledge that the results are not generalizable to populations beyond those with whom we spoke. However, this is an emergent topic about which next to nothing is known, especially in the states that did not previously have CTE standards. By shedding some light on the issue here, more targeted samples or true random samples may be utilized in future research.

Despite our efforts, there could also be errors in the findings that go beyond merely being out of date (since states continue to develop their standards systems in the wake of the passage of Perkins IV). The findings presented here are based on what we learned about the standards systems from relevant Web sites and the interviewees.

A Note on the Terminology Used in This Report

Most states use the term *content standards* for what we consider CTE standards. Others use terms such as *curriculum standards*, *skill standards*, and *competencies*, yet all refer to the standards that are the subject of this report. In addition, all of these terms are exclusive of academic standards (although these are often found in CTE courses) and they are exclusive of program standards, which usually refer to compliance standards ensuring a minimum of facilities and resources. Other standards commonly found in CTE courses are work readiness or employability standards, which tend to be based on “soft skills” (i.e., the ability to show up on time or work as a member of a team).

We cannot definitively say that the terminology used in one state is used in the same way in another. In other words, it is beyond the scope of this project to attempt to verify, for example, that terms like *pathway* or *program standards* mean exactly the same thing across states. This conflation of terms at all levels of this project at times created confusion and, at the least, labeling problems. We opted to use the terminology used by each state when describing that state. This is a limitation to interpreting some of the findings, but also reflects the heterogeneity of our multistate system.

PHASE 1 RESULTS: SCAN OF STATE SECONDARY CTE STANDARDS SYSTEMS

There was a great deal of variability in the types of standards systems developed or being developed across the 50 states and the District of Columbia. This variability appears to be driven by each state’s unique philosophies and practices, such as the balance of state and local control of education and the amount and source of secondary CTE funding. However, although we examined such explanatory variables, believing they would allow us to categorize the states into logical groups, such was not the case. The states that did or did not have completed standards systems did not cluster neatly around any of the variables we included in the interview questions. No variable emerged as a clear sorting mechanism. We have chosen to present the state responses to our queries in text and tabular form, and for each research question, we provide more detail on states that are doing something different from most other states.

Description of Statewide Secondary CTE Standards System (*Question 1*)

Interview Question 1 asked, “*Has the state developed a system of CTE standards?*” The subquestions included asking for the state’s definition of the term *standards* and how that definition was operationalized. We also asked if there were standards for all CTE programs of study and, if not, what the plans were for completing the CTE standards system. The purpose of Question 1 was to determine which states had a statewide CTE standards system in order to classify them for analytical purposes. Many respondents also provided other information that helped describe the standards, such as whether they were written at the program or course level, and whether the state’s academic standards system was crosswalked onto (i.e., integrated with) CTE

courses and programs. These were added to the descriptors for this section.²

Of the 50 states and the District of Columbia, 31 reported that they had a statewide secondary CTE standards system (see Table 3)—we call these states Group A. Eleven states were either in the process of developing or had partially developed such a system. These states comprised Group B. Group C consisted of 9 states that did not have a statewide CTE standards system, although they did have local CTE standards. All of the findings from the Web searches and telephone interviews are presented via these three groupings. It should be noted that only Table 3 contains all 50 states and the District of Columbia. The subsequent tables only include 49 of the 51 entities because we were unable to interview officials from two states.

Group A: States with a Statewide Standards System

Thirty-one states reported having a statewide secondary CTE standards system in place. Of course, these systems look quite different from one another. Most of these differences will be apparent in the results that follow. In fact, nearly the only commonality that these states share is that they have completed or nearly completed their CTE standards systems. However, some information about the states in Group A is provided here. For instance, some of these states have had CTE standards (or some previous version) for decades (Florida, Ohio, Virginia, West Virginia), while others began to develop them in the 1980s or 1990s, or more recently (Kansas, Missouri, Utah). In some states, the CTE standards are part of a comprehensive accountability system including academic and employability standards (Kentucky, Massachusetts, Ohio).

Many states in Group A are local control states to the extent that although they have a statewide CTE standards system, they have no way of monitoring its implementation (California, Indiana, Kansas, Missouri, Nebraska). Conversely, there are states with centralized control over secondary curriculum, where only state-developed curriculum can be taught, although local agency input is accepted (Virginia).

There are states that grant seals of competency or technical endorsements to high-performing CTE students upon graduation (i.e., New York, Virginia). However, these two states are very different in other ways. For instance, Virginia requires local education agencies to use only state-developed CTE curricula. In New York, on the other hand, local agencies are in charge of almost everything from curriculum development to allotting state education aid to the subject areas. In New York, state approval and implementation of the standards are not required unless a school wants to grant students the technical endorsement.

Group B: States with an Incomplete Statewide Standards System

Table 3 lists the 11 states in Group B, which were either in the process of developing a

² Once these variables emerged and became salient, we were able to retrieve similar information on the other states by returning to the state department of education Web sites. A small number of follow-up calls were necessary.

Table 3
State Groupings with Respect to Statewide Secondary CTE Standards Systems

<i>Group A States^a</i>	<i>Group B States^b</i>	<i>Group C States^c</i>
n = 31	n = 11	n = 9
Alabama	Georgia	Alaska
Arizona	Hawaii	Colorado
Arkansas	Idaho	District of Columbia
California	Illinois	Maryland
Connecticut	Maine	Michigan
Delaware	Nevada	Minnesota
Florida	New Mexico	Montana
Indiana	North Dakota	New Jersey
Iowa	Rhode Island	Pennsylvania
Kansas	South Dakota	
Kentucky	Vermont	
Louisiana		
Massachusetts		
Mississippi		
Missouri		
Nebraska		
New Hampshire		
New York		
North Carolina		
Ohio		
Oklahoma		
Oregon		
South Carolina		
Tennessee		
Texas		
Utah		
Virginia		
Washington		
West Virginia		
Wisconsin		
Wyoming		

Note. The sample was all 50 states plus the District of Columbia, for a sample size of 51.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

statewide CTE standards system or had an alternate statewide system. For instance, Georgia and Hawaii were revamping their CTE programs to align with academic standards revision and were about one-third done at the time of our data collection and interviews. Maine planned to implement national standards, but there were various sets of national standards available for many program areas, and local agencies were free to choose from among these standards. North Dakota had anticipated completion dates for its remaining program areas posted online. New Mexico had created some CTE standards and sent them to educators for comment. In Nevada, standards development is an ongoing process. They had developed a system of standards at the program area level, but found that this did not provide enough specific guidance. The goal became to develop standards for every CTE course. Rhode Island appeared to be the least far along among the states in Group B, reporting to us that they were at “the very early stages” of creating a CTE program approval process that would have standards embedded within it. South Dakota was in the process of creating or updating all of its CTE standards, making the exact status of the system difficult to discern.

Idaho did not have a legally-adopted standards system for CTE. Idaho had program standards that specified a curriculum for many course sequences, and those included competency profiles and task lists. However, according to the state director, these competency lists were not referred to as standards. Furthermore, the competencies either were not complete, not thorough, outdated, or otherwise not used in some program areas.

Illinois legislated an Occupational Skills Standards Credentialing Council in the late 1990s, and it developed standards for several CTE program areas. However, political issues and government downsizing resulted in the Council being discontinued in about 2005. The skill standards books are still available, but there is no further movement at the state level to continue developing additional statewide CTE standards.

Vermont is similar to Idaho in that it too had competency lists that were old, not used consistently, and not maintained. They were beginning to make the switch from competencies to standards, with the hope that by moving to broader standards, there would be less need for updating than with the more specific, detailed competencies. The state planned to focus on higher-order skills and leave many of the details to local curriculum.

Group C: States with a Local as Opposed to Statewide Standards System

The states in Group C had locally-developed CTE standards but did not have a statewide system. For instance, Michigan, Minnesota, New Jersey, and Pennsylvania had mandated that local agencies develop or adopt CTE standards. Michigan has decided to change policy and has begun to adopt a statewide CTE standards system. However, neither Minnesota nor Pennsylvania planned to change their policy as of summer 2006, the time of our interviews. In fact, Minnesota has legislation on the books requiring that local school districts establish their own standards. New Jersey did not participate in an interview for this project, so we have no further information on its state policies.

Both Alaska and Maryland have some state-developed standards, but local districts can create or select others. In Alaska, there has not been any legislative authority to develop state-wide standards. However, the state CTE office gathered teacher teams and state advisory people together to develop rough outlines of a standards system, the use of which remains voluntary. Maryland required that local agencies include standards in their CTE programs, but the state did not mandate which standards. Nevertheless, locally-developed standards still must be approved by the state. In addition, Maryland developed its own model CTE programs that are standards-based. When local agencies implement these model programs, known as Fast Track programs, they are automatically approved.

The states of Colorado and Montana did not have statewide systems of CTE standards. Local agencies have developed standards on their own in some cases. The only statewide system in Montana is a set of workplace standards, but these apply to all program areas and are of the “soft skills” type (SCANS, 1991). Colorado is currently beginning the process of developing a statewide system, but many districts have developed their own local standards.

Finally, the District of Columbia eliminated its vocational education system in the 1990s and a new system has not been developed to take its place. State office staff is beginning to develop a modern CTE system that will include standards, but due to the vague delineation between state and local control in the District of Columbia, it becomes difficult for the “state” to issue mandates.

How Do States Define Standards?

As noted above, the term *standards* has evolved to have many, sometimes conflicting definitions. We often found a definition for *standards* on a state’s DOE Web site. As with all questions, what we did not find online, we asked of the state contacts. The most common definition was that standards refer to “what a student should know or be able to do,” or some variation thereupon. This was the response of 18 of the 31 states in Group A (58%) and 6 of the 11 states in Group B (55%, see Table 4).

While most states converged around the above statement, the rest varied greatly in their use of the term *standards*. For these states, the definition of *standards* ranged from measurement tools to the level of competence required. *Standards* were defined as expected outcomes as well as a body of criteria. This creates some confusion in the discussion and categorization of state schemes. The discrepancies in definitions cannot be resolved, only recognized as an outcome of our federalized system in which education is the responsibility of each state.

What Do States Call Their Standards System?

For the same reasons that we found myriad definitions for the word *standards*, we also found many names for what is essentially the standards system. In fact, no two states shared the

Table 4
States Sharing the Most Common Definition for Standard

<i>“Standards Reflect What a Student Should Know or Be Able to Do”</i>	
<i>Group A States^a</i>	<i>Group B States^b</i>
<i>n = 18 of 31</i>	<i>n = 6 of 11</i>
Alabama	Georgia
California	Hawaii
Connecticut	Illinois
Indiana	Nevada
Iowa	North Dakota
Kansas	Vermont
Kentucky	
Louisiana	
Mississippi	
Missouri	
Nebraska	
New Hampshire	
New York	
South Carolina	
Texas	
Utah	
West Virginia	
Wisconsin	

Note. The sample consisted of the 42 states (including the District of Columbia) in Groups A and B.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

pair of names used for the standards and the benchmarks that comprise them.³ Rather, every state had a unique naming system. For example, while both Iowa and California called their standards *Model curriculum standards*, the benchmarks were called *benchmarks* in Iowa (i.e., standards are made up of benchmarks), whereas in California, standards were made up of *subcomponents*.

The most common first word in the name for standards among states in Groups A and B was in fact *standards*. Nine states across both groups called them *standards*, while eight others called them *content standards*. Other common names were *competencies* (seven states) or *curriculum frameworks* (five states). Indiana and South Carolina did not seem to have benchmarks. In the remaining states from both groups, benchmarks were called *indicators*, *tasks*, *criteria*, *learning expectations*, or *objectives*. These terms point again to the conflation of the term standards to mean both the tools by which we measure standards and the level of competence required.

The contact from South Carolina reported that its DOE had adopted the term *standards*

3 In federal parlance, these are known as *core indicators* and *levels of performance* for the indicators.

rather than *competencies* to align itself more closely with the language used for academic courses. Conversely, two states (Nebraska, Virginia) reported that they specifically did not use the word *standards* for the CTE system, because that word was reserved in those states for academic subjects. Instead, these states used the terms *Essential Learnings* and *task lists*, respectively.

At What Level are the Standards Written?

There are various levels of interest in this regard. The first can be described as the specificity of the standard. We selected standards from two CTE areas to illustrate the levels of specificity at which standards can be written. A standard for a gas metal arc welding activity and a business and marketing standard from basic economics from all states in Groups A and B appear in Appendix A. In most of these states (30 of 41), the standard for this particular welding activity was found in the welding or metal fabrication course. A common example is the standard from Virginia: “Perform single pass fillet welds, all positions, on carbon steel, using short circuit transfer.” In other states, the standard was located at a higher level in the course/program hierarchy, such as in the Industrial and Engineering Systems career learning area⁴ (Oregon) or the Engineering Technologies career cluster (New York). In these latter cases, a sample would be: “Understand product development and use specified techniques for producing a product or service” (New York). As is evident from these examples and from Appendix A as a whole, the welding and business/marketing standards (and by extension most CTE standards) were written at very different levels of specificity across states. In some cases, the standards for different program areas within the same state are written at different levels of specificity, again confounding attempts to find commonality in standards systems across states, and even across program areas within the same state.

A second, related use of the word *level* in this context refers to whether states wrote their standards at the course level or at the program area level. Of the 31 states in Group A, 15 of them wrote their standards at the course level and 11 wrote their standards at the program area level. The remaining five states in Group A varied widely, from Wyoming’s broad standards, which were written at the “strand” level, to standards written at the instructional unit level, as in Oklahoma. Six of the 11 states in Group B were developing their standards at the program area level, and none were creating course-level standards. Of the remaining 5 states in Group B, 3 varied or were single entries (i.e., one state, Illinois, reported that the standards were at the cluster level), and the remaining 2 (Hawaii, Rhode Island) were not far enough along in their standards development to report at what level their standards are or will be written.

It is important to note that we classified the states’ standards using the terms used by state contacts or found online. This again leads to a confounding of results because states used the same terminology for different levels. For instance, the Illinois DOE Web site notes that CTE in that state is organized around five occupational program areas⁵ that contain clusters, such as the welding cluster in the Industrial and Technical Education program area. For Illinois, therefore, we recorded that their standards were written at the cluster level. However, the more common

4 A career learning area is the state-specific name for a career cluster.

5 See <http://www.isbe.state.il.us/career/html/cte.htm>

use of *cluster* refers to “a grouping of occupations and broad industries based on commonalities,”⁶ which is one level above what Illinois calls a program area, and therefore two levels above what Illinois calls a cluster.

How Do States Operationalize Their Standards?

We determined that most states answered this question in the same way as they did Question 6 (“*How does the state ensure that the standards are reflected in practice?*”), so we incorporated the responses to this question with those of Question 6.

Are There Standards for All CTE Programs of Study?

Among the 31 states in Group A, 26 have completed their CTE standards systems and five (Delaware, Kentucky, Louisiana, New Hampshire, Oregon) are almost complete. There were no states that were merely underway or that did not have standards by definition. Similarly, among the 11 states in Group B, there were none that had their standards system complete or even mostly done. Eight of these states were in the process of developing their standards system, and three of them had incomplete or alternate standards systems. This question became a validity check of our categorization process.

Very few states that do not have completed standards systems have timelines for completing them. Of the five states listed above that have almost finished developing their standards, Kentucky and Louisiana have no plans to complete the systems. Kentucky has no more funding, and Louisiana will not provide standards for certain courses with limited enrollment. Delaware, New Hampshire, and Oregon are near completion but do not have timetables. Maine, Georgia, and South Dakota, states from Group B, are the only states that provided timelines for the completion of their standards.

Development of CTE Standards System and Its Review (*Question 2*)

Interview Question number 2 asked, “*How were the existing standards developed?*” The subquestions asked what sources were used and whether any governance or procedural issues emerged in the development process. We also asked about the standards review process and its frequency. The purpose of Question 2 was to learn more about the standards systems: whether the states had used similar sources or processes in their development and their review. We asked whether any issues emerged in order to see what was important to stakeholders during the development process.

Based on a review of state responses, we can describe the typical process of standards development. This process involved convening a committee for each CTE program area. These committees were minimally comprised of business and industry representatives and state and local CTE administrators and educators. In some states, these committees also included labor

6 See <http://www.careerclusters.org/list16clusters.php>

representatives, parents, community members, academic instructors, or postsecondary instructors. These committees were charged with researching existing standards from national groups, industry groups, state licensure, other states' standards, and other sources. They also identified state-specific needs. They developed a set of standards that was usually sent out to CTE teachers across the state for comment. After the standards were revised, they were often validated or endorsed by business and industry, and then submitted to the state board of education for approval. Of the 49 states (including the District of Columbia) that responded to the telephone interview, 33 used this process of standards development (see Table 5).

Table 5
States That Reported Using the Typical Standards Development Process

<i>Group A States^a</i>	<i>Group B States^b</i>
n = 26 of 30	n = 7 of 11
Arizona Arkansas California Connecticut Delaware Florida Indiana Iowa Kansas Kentucky Massachusetts Mississippi Nebraska New Hampshire New York North Carolina Ohio Oklahoma Oregon Texas Utah Virginia Washington West Virginia Wisconsin Wyoming	Georgia Hawaii Maine Nevada North Dakota Rhode Island South Dakota

Note. The sample consisted of the 41 states (including the District of Columbia) in Groups A and B.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

Three states from Group A and two states from Group B reported using different processes. For instance, among the states in Group A, neither Louisiana nor Missouri reported convening any sort of panel to survey and adapt standards to the state. Tennessee reported using the DACUM process⁷ for its standards development. Among the states in Group B, Illinois was using the typical process, but it was truncated for lack of funding. Illinois never completed development of its standards system. New Mexico reported that the cabinet secretary decided to adopt national standards where possible instead of developing a state-specific system. The rest of the states (i.e., the two remaining states in Group B and all eight states in Group C) do not have statewide standards systems yet, and so could not answer this question. Finally, South Carolina had a standards system but was unable to describe the development process because it had occurred so long ago.

What Were the Sources for the Standards?

We asked the state representatives what sources were used in the standards development process. Most states cited national, state, local, and industry sources. Most of the responses included all four sources (no table). State sources included both state-specific licensure agencies and examinations of other states' standards systems. All of the states in Groups A and B used national sources except two: Washington only mentioned industry standards and was not more specific, and Maryland cited licensure and VTECS⁸ as the sources of standards for its Fast Track model programs. The only other atypical response was from California, which used the typical process but also cited a standards model developed by McREL (Mid-continent Research for Education and Learning) (Kendall & Marzano, 2004). The model was created for academic standards development, but then applied to CTE (McREL, n.d.)

What Governance or Procedural Issues Emerged in Development of These Standards?

Across the states in Groups A and B, 11 reported no governance or procedural issues in the development of the standards. Many states noted that the various agencies worked well together and that the process went smoothly, although it was time-consuming. When there was an issue, the state contacts reported trying to resolve it quickly in order to continue moving forward. One state contact noted that CTE teachers feared that developing a standards system would be used to "identify inadequate teachers." This state addressed this issue by involving teachers in the system's development. Table 6 lists the issues that were reported by more than one state.

How Frequently are Standards Reviewed and What Process is Used?

Most of the states in Groups A and B (14 in Group A, 8 in Group B) reported that they did not have a standards review process in place as of summer 2006. The states that did have a

7 DACUM (<http://www.dacum.org/>), an acronym for developing a curriculum, is a job analysis process using incumbent workers to describe the duties, tasks, knowledge, skills, and traits of a specific occupation for developing curriculum.

8 VTECS (<http://www.v-tecs.org/>) is a state consortium that develops competency-based CTE products such as standards and assessment instruments.

Table 6
Common Governance and Procedural Issues

<i>Question 2b:</i> <i>“What governance or procedural issues emerged in the development of these standards?”</i>	
3 states	It was challenging to set up the development process.
3 states	It was challenging to decide at what level (i.e., secondary or postsecondary) certain units should be taught.
3 states	There was concern over requiring teachers to take certification exams in order to implement standards.
3 states	Certification and assessments require extra funding in times of level or reduced funding for CTE.
3 states	There was concern that state standards would infringe on local discretion.
2 states	It was challenging to create consistency across the CTE and academic standards systems.
2 states	Postsecondary is not as standards-oriented, so it was challenging to align with them.

Note. The sample consisted of the 41 states (including the District of Columbia) in Groups A and B.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

standards review process tended to have a five-year cycle for review of CTE standards. On either extreme, Hawaii has a yearly review cycle, and Texas has a 6- to 8-year review cycle. In most cases, the standards review process was reported to be similar to the typical standards development process described above.

Alignment of Secondary State CTE Standards System with Other State Standards (Question 3)

Originally, Question 3 asked, “*Are the CTE standards aligned with the state’s postsecondary technical standards?*” However, during the course of the interviews, a logical precursor to this question emerged: We first needed to know if the state had a postsecondary standards system. The purpose of Question 3 was to determine the extent of overall CTE standards system alignment. We were interested not only in which states had secondary state CTE standards, but also whether that system was connected to the postsecondary education and training pipeline. We also gauged the coherence of a state’s standards system by asking whether there had been participation from postsecondary educators in the development of the secondary standards.

Was Postsecondary Present when the Secondary CTE Standards were Developed?

Of the 49 states (including the District of Columbia) that responded to the telephone interview, 26 reported that postsecondary was present during the standards development process (see Table 7). Of the remaining 23 states, 17 indicated that postsecondary representatives were not involved in this process, and 6 responded that postsecondary involvement was only occasional and that they were working to encourage alignment between secondary and postsecondary programs.

Table 7
States with Postsecondary Involvement in Secondary CTE Standards Development

<i>Group A States^a</i>	<i>Group B States^b</i>	<i>Group C States^c</i>
<i>n = 19 of 30</i>	<i>n = 5 of 11</i>	<i>n = 2 of 8</i>
Arizona	Georgia	Maryland
Arkansas	Hawaii	Michigan
California	Illinois	
Delaware	Nevada	
Florida	North Dakota	
Iowa		
Louisiana		
Mississippi		
Nebraska		
New York		
North Carolina		
Ohio		
Oklahoma		
Oregon		
Texas		
Utah		
Washington		
West Virginia		
Wyoming		

Note. The sample consisted of the 49 states (including the District of Columbia) that responded to our telephone interview.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

It is interesting to note that two of the eight states in Group C (Maryland, Michigan) responded that postsecondary was involved in the secondary standards development process, even though these states do not have statewide standards systems. In Maryland, secondary and postsecondary CTE are housed in the same agency, so postsecondary was involved in the development of their model Fast Track programs from the start. Michigan answered this question with reference to their local secondary standards and the local partnerships and alignments between secondary and postsecondary that have been created through Tech Prep and/or articulation agreements.

Are the CTE Standards Aligned with the State’s Postsecondary Technical Standards?

States in Group A

Twelve of the 30 states in Group A reported that they had a statewide postsecondary tech-

nical standards system in addition to their secondary standards system (see Table 8). Of these 12 states, 10 had aligned the two systems. Two states, Kentucky and Nebraska, both indicated that they were working toward this goal. In two other states (Florida, Ohio), there is no distinction between secondary and postsecondary standards—they are simply all CTE standards.

Table 8
States with Statewide Secondary and Postsecondary CTE Standards and Their Alignment

<i>Group A States That Have Statewide Postsecondary Technical Standards System</i>	<i>Group A States That Have Aligned Secondary and Postsecondary Standards</i>
<i>n = 12 of 30</i>	<i>n = 10 of 12</i>
Arkansas	Arkansas
Delaware	Delaware
Florida	Florida
Kentucky	----
Louisiana	Louisiana
Mississippi	Mississippi
Nebraska	----
North Carolina	North Carolina
Ohio	Ohio
Oklahoma	Oklahoma
Texas	Texas
Utah	Utah

Note. The sample consisted of the 30 states in Group A, that is, those states that have complete or nearly complete statewide standards systems.

Of the remaining states in Group A, 14 reported having no statewide postsecondary standards system, and 4 reported that they had “some” postsecondary standards (no table). Spokespersons from most of these states reported that their postsecondary technical standards system was under development and that they had “hundreds” of articulation agreements spanning secondary and postsecondary. Often states reported that the colleges and technical schools were in charge of developing, monitoring, and teaching their own standards. In some cases, states lack an umbrella organization or board for community colleges, making statewide standards development challenging. However, our state contacts felt that it was important to make the system work for students and reported strong efforts to create sequential pathways.

The 10 states that reported alignment across secondary and postsecondary standards (cf. Table 8) are all found among the 18 states in Table 7 that had had postsecondary participation in the development of the secondary standards. These 10 states appear to be the furthest along in terms of providing seamless, standards-based CTE from secondary to postsecondary. Two of these states, Delaware and Utah, also reported alignment with baccalaureate programs and universities for relevant CTE program areas.

There were seven states in Group A that answered “no” to all three questions related to postsecondary connections. For the most part, these states had some locally-developed postsecondary standards and alignment, but no authority at the state level to develop a statewide system of postsecondary technical standards.

States in Group B

Of the 11 states in Group B, 4 reported that they had a statewide postsecondary technical standards system. New Mexico was the only state in this group to indicate that it had postsecondary state standards and that these standards were aligned with the secondary CTE standards. Like Maryland, in New Mexico, the secondary and postsecondary state CTE agencies are one and the same, aiding postsecondary involvement.

Most of the states in Group B were working towards creating a postsecondary state standards system. As a part of their standards work, they were developing postsecondary standards and creating connections between the two systems. Several of the states mentioned that standards development is an ongoing process that requires many hours of staff time and additional money to accomplish.

States in Group C

Maryland was the only state in Group C reporting that it had postsecondary technical standards and that the secondary and postsecondary systems were aligned. In this, the state contact was referring to either the model Fast Track programs they had developed or to locally-developed CTE standards. Many of the states in this group reported that they were encouraging local districts to create standards systems that were aligned with their local community colleges and trade schools.

Alignment of CTE Standards with Other Standards

We did not specifically ask whether a state’s CTE standards system was aligned with its academic standards. However, most states volunteered this information, or it was obvious on their Web sites. This alignment is called crosswalking, or integrating specific state academic standards into CTE courses and coursework. States identify the academic skills addressed in each CTE program area, and these skills become an explicit part of the curriculum. Thus the purpose of crosswalking is to demonstrate the academic foundations of CTE. While some might argue that the time spent on academic skills takes away from the time needed to master the skills of the CTE program area, most CTE program areas do include important foundational academic skills. In the current climate of strong accountability for academic achievement, high school program areas that contribute to academic achievement may be more highly valued than others.

One example of crosswalking would be welding students in Louisiana who were learning and following safety and inspection procedures. These students were also “Analyzing and evaluating complex texts with supportive explanations to generate connections to real life situations

and other texts.”⁹

From what we could discern from Web sites, 18 of the 31 states in Group A and 4 of the 11 states in Group B had crosswalked their academic standards to their CTE courses. Interestingly, some states that had not even completed their CTE standards development had already crosswalked academic standards to CTE courses. Table 9 shows which states had crosswalked their academic standards onto CTE courses.

Table 9
States That Have Crosswalked Their Secondary Academic Standards to Their CTE Programs

<i>Group A States^a That Have Crosswalked Academic Standards to CTE</i>	<i>Group B States^b That Have Crosswalked Academic Standards to CTE</i>
<i>n = 18 of 30</i>	<i>n = 4 of 11</i>
Arizona	Georgia
Arkansas	Nevada
California	North Dakota
Delaware	Vermont
Kansas	
Kentucky	
Louisiana	
Mississippi	
Missouri	
Nebraska	
New Hampshire	
New York	
North Carolina	
Ohio	
Texas	
Virginia	
Washington	
Wisconsin	

Note. The sample consisted of the 41 states (including the District of Columbia) in Groups A and B.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

In terms of aligning CTE standards with other standards systems, we found that 38 of the 49 participating states have developed employability or work readiness standards for high school students. Again the terminology varies widely, from *employability* to *work readiness* to *21st century workplace skills*. These standards tend to be made up of the “soft skills” described by Murnane and Levy (1996) and the SCANS report (1991). In many cases, these standards are an overarching set of standards that all CTE program areas must teach. In other cases, all subject ar-

9 See <http://www.doe.state.la.us/lde/uploads/2909.pdf>

eas are responsible for providing instruction in soft skills. In the case of Montana, employability skills are their only statewide CTE standards.

The final type of linkage of standards systems consists of those states that developed their secondary CTE standards in concert with other economic development standards, such as those used by apprenticeship trades or workforce investment boards under the *Workforce Investment Act of 1998*. States such as Maryland and Washington are thus ensuring that their workforce develops the skills deemed necessary by the state labor market, regardless of the institution in which these skills are acquired (i.e., high school, trade school, community college).

Connections Between CTE Standards, Program Approval, and Funding (*Question 4*)

Interview Question 4 asked, “*What is the approval process for new secondary CTE programs?*” It was designed to ascertain whether states were requiring local agencies to incorporate the CTE standards into new programs that are developed. The first subquestion, “*Is there a statewide system or is it a matter of local decision making?*” provided a window into the level of state versus local control of CTE programs, their development, and their content. The last two subquestions asked about the connections between CTE standards, program approval, and funding. The purpose of these questions was to learn whether and how states use program approval or funding policies to require implementation of state CTE standards.

What is the Approval Process for New Secondary CTE Programs?

In their answers, state representatives often referred to the program approval process for existing CTE programs rather than the process for new programs. Fortunately, these two processes were the same in most cases. Typically, states reported that the impetus to start a new program was a local one, but that local agencies were required to follow the statewide process for developing such programs and applying for state approval in order to be funded. State approval was usually required before the program could be taught, but in some states, a program may operate provisionally until approval is granted. Most states have annual or periodic review processes, but in Ohio, once a program is approved, no further updates are necessary.

In general, the state DOE agencies described a process in which they reviewed local applications to ensure that program quality or compliance standards were in place, that the program had a local advisory board, and that it met a documented labor market demand in the area. Florida also required that the course or program be articulated with a postsecondary education program. Program approval processes ranged from competitive—such as in Arkansas, where only approximately half of applications are approved—to merely informational, such as in Louisiana, so that the state can maintain quality and rigor and avoid duplication of effort across the state.

Of the 49 states that participated in this project, 17 states in Group A, 7 states in Group B, and 6 states in Group C reported that they had a statewide approval process for new programs, making 30 states total (see Table 10).

Table 10

States with Statewide Program Approval Process for New CTE Programs

	<i>Group A States^a</i>	<i>Group B States^b</i>	<i>Group C States^c</i>
<i>Statewide Process</i>	n = 17 of 30	n = 7 of 11	n = 6 of 8
	Arkansas Delaware Florida Iowa Kansas Louisiana Massachusetts Nebraska New Hampshire New York North Carolina Tennessee Texas Utah Virginia Washington West Virginia	Hawaii Idaho Maine New Mexico North Dakota Rhode Island South Dakota	Alaska Colorado Michigan Minnesota Montana Pennsylvania

Note. The sample consisted of the 49 states (including the District of Columbia) that responded to our telephone interview.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

There are some interesting variations on the general rule described here among states in Group A. In Iowa, there is a state approval process, but local agencies are not required to use it. Whether or not local agencies seek program approval, they still must meet the state CTE standards, in the same way that all K-12 courses in Iowa must incorporate standards and benchmarks. The purpose of applying for program approval is to access additional funding available only to state-approved CTE programs. Nebraska’s program approval process is in flux: historically, it had been based upon the presence of certain courses that had to be in place to receive approval. The Nebraska DOE is moving from that process to a more standards-based one, which will also allow local agencies more flexibility in program development. Finally, in New York, seeking program approval is also voluntary. However, local districts that do go through the approval process are able to grant a technical endorsement on the diplomas of those students who meet the requirements.

Twelve states reported that both the state agency and local agencies worked together in a cooperative process to approve new programs (see Table 11): eight in Group A, three in Group B,

and one in Group C. In general, local agencies decide whether a new program is needed and how it will be developed and approved. Then they work within state guidelines to structure the program to meet both local and state requirements. For instance, in Oklahoma, local agencies are obligated to work within state guidelines, but it is the local board of education of each technical center that approves new programs. In Vermont, local agencies submit documentation to the state to seek approval for a new program; however, the local advisory board determines the need for the program.

A total of six states (five in Group A, one in Group B) reported that local agencies alone decide when a new program is needed, and they alone are responsible for the approval process (see Table 11). State-level agencies such as the DOE often provide technical assistance and guidance, but there is no required statewide process. For instance, in California, all courses are developed and approved locally. Local agencies can develop their own programs of study as needed. Wisconsin also does not have a formal program approval process at the state level. If a school wants to start a new program it can do so with neither state nor district input.

Table 11
States with State/Local or Local Program Approval Process for New CTE Programs

	<i>Group A States^a</i>	<i>Group B States^b</i>	<i>Group C States^c</i>
<i>Both Statewide and Local Process</i>	n = 8 of 30	n = 3 of 11	n = 1 of 8
	Arizona Indiana Kentucky Mississippi Ohio Oklahoma South Carolina Wyoming	Illinois Nevada Vermont	Maryland
<i>Local Process</i>	n = 5 of 30	n = 1 of 11	n = 0 of 8
	California Connecticut Missouri Oregon Wisconsin	Georgia	

Note. The sample consisted of the 49 states (including the District of Columbia) that responded to our telephone interview.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

One approach to program approval could not be categorized. In the District of Columbia, the CTE executive director has both state and local functions; as such, DC’s program approval

process did not fall into any of our categories and is not included in the table.

What is the Connection Between Standards and Program Approval?

Of the 49 states (including DC) that responded to the telephone interview, 30 required that CTE standards be a component of programs in order for the programs to receive state approval (see Table 12): 24 in Group A, 4 in Group B, and 5 in Group C.

Table 12
States that Require CTE Standards in Order to Approve Programs

<i>Group A States^a</i>	<i>Group B States^b</i>	<i>Group C States^c</i>
<i>n = 24 of 30</i>	<i>n = 4 of 11</i>	<i>n = 5 of 8</i>
Arizona	Georgia	Alaska
Arkansas	Maine	Maryland
Connecticut	North Dakota	Michigan
Delaware	Vermont	Minnesota
Florida		Pennsylvania
Indiana		
Kansas		
Kentucky		
Louisiana		
Massachusetts		
Mississippi		
New Hampshire		
North Carolina		
Ohio		
Oklahoma		
Oregon		
South Carolina		
Tennessee		
Texas		
Utah		
Virginia		
Washington		
West Virginia		
Wyoming		

Note. The sample consisted of the 49 states (including the District of Columbia) that responded to our telephone interview.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

Among the remaining six states in Group A that do not require CTE programs to include standards in order to be approved, five do not have a program approval process that is connected to standards (California, Iowa, Missouri, Nebraska, Wisconsin). The remaining state, New York, has a voluntary program approval process, but should a district seek program approval, they must show how the standards will be addressed. The remaining seven states in Group B (in which the standards system is in process) reported that their program approval process was also in process or only in place for some of the standards they had developed.

Five states in Group C (Alaska, Maryland, Michigan, Minnesota, Pennsylvania) reported that program approval was contingent upon local agencies showing how their locally-developed standards would be implemented. Regardless of which standards the local agencies choose to use, evidence of standards is required for program approval.

What is the Connection Between Program Approval and Funding?

While program approval is required for local districts to receive Perkins funding, the same is not true with respect to state funding. Of the 49 states participating in this project, 43 reported that they did not fund unapproved programs (see Table 13). Nearly all of the states in Group A (26 of 30), 9 of the 11 states in Group B, and all 8 states in Group C require program approval in order to fund programs. In the four states in Group A that did not require program approval (California, Iowa, New York, Wisconsin), state funding is available to CTE programs whether they are approved or not.

There are 13 more states in Table 13 than in Table 12; those 13 states must approve programs before funding them, but they are not necessarily taking standards into account in that approval process. Most of those states are working to change current policy in this area. Only two of these states are in Group A—Missouri and Nebraska, neither of which requires CTE programs to include standards as part of the program approval process in order to receive state funding.

Discontinuing Outdated Programs (*Question 5*)

Interview Question 5 asked, “*How are outdated CTE programs discontinued?*” The purpose of Question 5 was to further describe elements of the CTE system, especially if the system was under development or revision in light of the implementation of CTE standards.

The project team grouped the states’ responses to Question 5 into four groups: a) states with a statewide process for discontinuing programs (17 states), b) states with a local process (20 states), c) states where state and local agencies are both involved in the decision to discontinue outdated programs (8 states), and d) an under development/unknown category (4 states) ($n = 49$) (see Table 14). Four states (Delaware, District of Columbia, Rhode Island, South Carolina) were either currently developing their process or the interviewee did not know the answer to the question. States where both state and local agencies share in the decision to discontinue CTE programs reported that each agency has its own criteria that must be met before closing down a

Table 13

States that Require CTE Program Approval in Order to Fund Programs

<i>Group A States^a</i>	<i>Group B States^b</i>	<i>Group C States^c</i>
<i>n = 26 of 30</i>	<i>n = 9 of 11</i>	<i>n = 8 of 8</i>
Arizona	Georgia	Alaska
Arkansas	Idaho	Colorado
Connecticut	Illinois	District of Columbia
Delaware	Maine	Maryland
Florida	Nevada	Michigan
Indiana	New Mexico	Minnesota
Kansas	North Dakota	Montana
Kentucky	South Dakota	Pennsylvania
Louisiana	Vermont	
Massachusetts		
Mississippi		
Missouri		
Nebraska		
New Hampshire		
North Carolina		
Ohio		
Oklahoma		
Oregon		
South Carolina		
Tennessee		
Texas		
Utah		
Virginia		
Washington		
West Virginia		
Wyoming		

Note. The sample consisted of the 49 states (including the District of Columbia) that responded to our telephone interview.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

program. The states that replied that local agencies decide whether to discontinue a CTE program often cited low enrollment as the primary criterion.

The states with a statewide process for discontinuing programs noted that programs were usually not ended outright. Instead, the state would work with local agencies to update or restruc-

Table 14

States with Statewide, State/Local, or Local Process for Discontinuing CTE Programs

	<i>Group A States^a</i>	<i>Group B States^b</i>	<i>Group C States^c</i>
<i>Statewide Process</i>	n = 11 of 30	n = 4 of 11	n = 2 of 8
	Arizona Florida Indiana Kentucky Louisiana Massachusetts Oklahoma Texas Utah Virginia Washington	Idaho Georgia Hawaii North Dakota	Maryland Michigan
<i>Both Statewide and Local Process</i>	n = 5 of 30	n = 3 of 11	n = 0 of 8
	Mississippi New Hampshire Ohio Tennessee West Virginia	Illinois Maine Vermont	
<i>Local Process</i>	n = 12 of 30	n = 3 of 11	n = 5 of 8
	Arkansas California Connecticut Iowa Kansas Missouri Nebraska New York North Carolina Oregon Wisconsin Wyoming	Nevada New Mexico South Dakota	Alaska Colorado Minnesota Montana Pennsylvania

Note. The sample consisted of the 49 states (including the District of Columbia) that responded to our telephone interview. Delaware, the District of Columbia, Rhode Island, and South Carolina were either developing a process for discontinuing CTE programs or did not provide an answer to the question.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

ture the program to meet new needs. For instance, the contact from Virginia stated that outdated programs evolved into newer, better programs rather than being discontinued. The idea is that by working closely with local agencies and reviewing programs frequently, the state can modify programs to meet changing state and local needs. Several of these states also mentioned that low enrollment often indicated that a program needs to be restructured or discontinued.

Ensuring that the CTE Standards are Reflected in Practice (*Question 6*)

Question 6 asked the representatives of the state CTE agencies, “*How does the state ensure that the established standards are reflected in practice?*” The rationale for asking this question was to discover whether the state was monitoring the implementation of its standards system. Even a sophisticated CTE standards system might only be used occasionally unless some means of verifying standards implementation is established.

The most common response was that assessment was or was slated to be the primary means by which states would ensure that the standards indeed guided local practice. Of those, 11 states had standards and were using assessments at the time of our data collection (Connecticut, Kentucky, Louisiana, Massachusetts, Mississippi, North Carolina, New York, Ohio, Oklahoma, Utah, West Virginia). These assessments varied widely, from end-of-program assessments (Kentucky) to end-of-course assessments (Oklahoma), from online assessments (West Virginia) to hands-on demonstrations (New York), and from state-developed exams (Utah) to state-specific vendor-developed exams (Connecticut). Site visits and professional development were the other most frequently mentioned means of assessment, followed by program reviews. Many states listed several approaches. All are tallied in Table 15.

Table 15
Common Processes for Ensuring that the Standards are Reflected in Practice

<i>Number of States</i>	<i>Process for Ensuring that the Standards are Reflected in Practice</i>
19 states	Assessment
12 states	Site visits
12 states	Professional development
7 states	Program review
7 states	No process mentioned
5 states	Technical assistance
4 states	Monitoring programs
3 states	Teachers record student competencies

Note. The sample consisted of the 49 states (including the District of Columbia) that responded to our telephone interview. States could mention more than one process.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

Seven states (District of Columbia, Idaho, Illinois, Indiana, New York, Oregon, Wyoming) reported that they did not (yet) have a means of ensuring that the CTE standards were indeed reflected in practice. However, of those seven states, the District of Columbia does not currently have standards to monitor, and the standards systems in Idaho and Illinois are incomplete (see Question 1). The last four states are in Group A. Indiana, Oregon, and Wyoming require that the standards used be noted on program approval applications, although that does not ensure implementation of the standards in CTE classes. New York presents a unique case. As noted earlier, New York has a dual system, whereby CTE programs that wish to prepare students for a technical endorsement on their diploma must seek program approval and must assess students in those approved programs. The New York DOE has no way of ensuring that non-approved programs are implementing the CTE standards.

Funding for Secondary CTE (*Question 7*)

The last question we asked included several subquestions, all related to funding secondary CTE. Question 7 asked, “*What state funding is available for secondary CTE programs? With respect to Perkins funding, how much goes to secondary education? Postsecondary education? In your state, does a secondary or postsecondary education agency have administrative oversight of Perkins funding?*” Question 7 sought to determine what role, if any, the amount of funding played in the development of a CTE standards system. We wondered whether states that allocated more state money to CTE were more likely to be further along in the standards development process. The subquestions probed for further detail on the funding situation in each state.

States with Ongoing State Funding

Of the 30 states in Group A, 22 reported that they provided ongoing state funding for secondary CTE programs (see Table 16). Only states with consistently administered funding were included in this count, as opposed to those with one-time grants or supplements for CTE activities. As noted by Klein (2001), determining whether a state CTE funding source is ongoing or not can be difficult. No information was collected about the amount of state funding provided, but several states attributed the development of the CTE standards system to those state funds. However, it must be noted (cf. Table 16) that 9 of the 11 states in Group B also receive ongoing state funding, yet they have not yet fully developed a CTE standards system. This finding suggests that ongoing state funding can help a state develop its CTE standards system, but it is not a sufficient condition. Clearly, though, developing standards and a statewide support system for their implementation requires investments of time and money.

Federal Perkins Funding

With respect to federal Perkins funding, the first step of the analysis was to collect data on the dollar amount of Perkins funding in each state. This information was retrieved in March 2007 from the NASDCTEc Web site.¹⁰ The amount of Perkins funding that a state receives is

10 See http://www.careertech.org/state_profile

Table 16
States with Ongoing State Funding for CTE

<i>Group A States^a with Ongoing State Funding for CTE</i>	<i>Group B States^b with Ongoing State Funding for CTE</i>	<i>Group C States^c with Ongoing State Funding for CTE</i>
n = 22 of 30	n = 9 of 11	n = 5 of 8
Arizona	Georgia	Alaska
Connecticut	Hawaii	Colorado
Florida	Idaho	Michigan
Indiana	Illinois	Montana
Iowa	Maine	Pennsylvania
Kansas	North Dakota	
Louisiana	Rhode Island	
Massachusetts	South Dakota	
Mississippi	Vermont	
Missouri		
North Carolina		
Ohio		
Oklahoma		
South Carolina		
Tennessee		
Texas		
Utah		
Virginia		
Washington		
West Virginia		
Wisconsin		
Wyoming		

Note. The sample consisted of the 49 states (including the District of Columbia) that responded to our telephone interview.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

calculated by a formula that takes several factors into account, including the size of various age groups in each state’s population (Perkins IV, 2006). In 2006, the Perkins allotments ranged from a low of \$1,016,249 (Wyoming) to a high of \$140,185,597 (California).

We created six levels of Perkins funding and sorted the states along those levels (see Table 17). The table shows that the states in Group A tend to be among those states receiving more Perkins funding, while the states in Groups B and C tend to cluster toward the lower end of the table, receiving less funding. Of course, Perkins funding is a function of state size, and the

Table 17
Perkins Funding for States

<i>Perkins Funding</i>	<i>Group A States^a</i> n = 30	<i>Group B States^b</i> n = 11	<i>Group C States^c</i> n = 8
<i>\$100 million+</i>	California Texas		
<i>\$50-99 million</i>	Florida New York Ohio		
<i>\$30-49 million</i>	North Carolina	Georgia Illinois	Michigan Pennsylvania
<i>\$20-29 million</i>	Arizona Indiana Kentucky Louisiana Massachusetts Missouri South Carolina Tennessee Virginia Washington Wisconsin		Minnesota
<i>\$10-19 million</i>	Arkansas Connecticut Iowa Kansas Mississippi Oklahoma Oregon Utah		Colorado Maryland
<i>\$1-9 million</i>	Delaware Nebraska New Hampshire West Virginia Wyoming	Hawaii Idaho Maine New Mexico Nevada North Dakota Rhode Island South Dakota Vermont	Alaska District of Columbia Montana

Note. The sample consisted of the 49 states (including the District of Columbia) that responded to our telephone interview.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

fact that more states in Group A have a statewide CTE standards system does not in and of itself establish that more funding to the other states would have resulted in their standards systems being begun or completed sooner, but we believe the apparent trend is worth noting. There are states in the lowest range of Perkins funding that also do not receive ongoing state funding: Delaware, Nebraska, and New Hampshire in Group A; New Mexico and Nevada in Group B; and the District of Columbia in Group C. Our telephone interviews confirmed that some of these states do not have the staff they need in order to monitor standards implementation or other activities. It might prove wise to monitor these states as they work to fulfill the mandates of Perkins IV, because continued inadequate funding might impede their success, and also because, in some cases, these states appear to support CTE with less funding overall compared to other states.

The final two subquestions of Question 7 (regarding the distribution of Perkins funding between secondary and postsecondary education agencies and about the fiscal manager of Perkins funds) were asked in order to gain more insight into the structure of CTE in the state. States decide how Perkins funds will be split between secondary and postsecondary education and every state seems to have a unique process. As Table 18 shows, however, the states in which a secondary education agency is the Perkins fiscal manager tend to allocate more Perkins funding to secondary education than do the other states. In fact, there was only one state with a secondary education agency as fiscal manager that allocated less than half of its Perkins funding to secondary education (Maine).

The states that had fiscal managers other than their secondary education agencies were more distributed across the range of percentages of Perkins funding going to secondary CTE (see Table 19). In these states, the most common response given to this question was that each agency managed its own funds (Delaware, Kentucky, Maryland, Montana, West Virginia). Four states reported that secondary and postsecondary CTE comprise one and the same office (California, Colorado, Florida, Idaho). Three states (Hawaii, Louisiana, Minnesota) used the postsecondary education agency (a board for higher education or for community colleges) as their manager of Perkins funds. Perhaps not surprisingly, these states are among those with the lowest percentages of Perkins funds going to secondary education. Finally, in Washington, the fiscal manager is the state Workforce Training Board, and Michigan reported that their manager of Perkins funding varies across secondary and postsecondary consortia.

Phase 1 Synthesis of Results

We have selected some of the most important variables from our interview questions in order to summarize the status of state CTE standards system development as of fall 2006, when states began to move toward implementing the Perkins IV legislation. We asked both static questions, in which the answers were fixed and not subject to change (e.g., which states followed a similar standards development process), and we asked dynamic questions whose answers change over time and as such, emerge now as more salient variables moving forward. Variables assessed by these latter questions include state funding, alignment with other standards systems in the state, and whether the state uses assessments to ensure standards implementation and to monitor

Table 18

Perkins Funding: Percent to Secondary Education Agencies in States Where the Secondary Education Agency is Fiscal Manager

<i>Percent Perkins to Secondary Education</i>	<i>Group A States^a</i>	<i>Group B States^b</i>	<i>Group C States^c</i>
<i>Over 80%</i>	n = 5 of 30	n = 2 of 11	n = 2 of 8
	Arizona Connecticut Ohio Oklahoma Virginia	Rhode Island Vermont	Alaska District of Columbia
<i>70-79%</i>	n = 6 of 30	n = 0	n = 1 of 8
	Arkansas Massachusetts Missouri New Hampshire South Carolina Tennessee		Pennsylvania
<i>60-69%</i>	n = 6 of 30	n = 3 of 11	n = 0
	Indiana Nebraska North Carolina Texas Utah Wyoming	Illinois Nevada North Dakota	
<i>50-59%</i>	n = 6 of 30	n = 2 of 11	n = 0
	Iowa Kansas Mississippi New York Oregon Wisconsin	Georgia New Mexico	
<i>Below 50%</i>	n = 0	n = 2 of 11	n = 0
		Maine South Dakota	

Note. The sample consisted of the 49 states (including the District of Columbia) that responded to our telephone interview.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

Table 19

Perkins Funding: Percent to Secondary Education Agencies in States Where the Secondary Education Agency is NOT Fiscal Manager

<i>Percent to Secondary Education</i>	<i>Group A States^a</i>	<i>Group B States^b</i>	<i>Group C States^c</i>
<i>80% and over</i>	n = 1 of 30	n = 0 of 11	n = 0 of 8
	Delaware		
<i>70-79%</i>	n = 1 of 30	n = 0 of 11	n = 0 of 8
	West Virginia		
<i>60-69%</i>	n = 0 of 30	n = 1 of 11	n = 3 of 8
		Idaho	Maryland Michigan Montana
<i>50-59%</i>	n = 2 of 30	n = 1 of 11	n = 0 of 8
	Florida Louisiana	Hawaii	
<i>Below 50%</i>	n = 3 of 30	n = 0 of 11	n = 2 of 8
	California Kentucky Washington		Colorado Minnesota

Note. The sample consisted of the 49 states (including the District of Columbia) that responded to our telephone interview.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.

^cGroup C states have either mandated that local agencies develop standards or local agencies have done so voluntarily.

student achievement in CTE. These categories are found in Table 20.

As can be seen from Table 20, we began with the 30 states in Group A, which consists of the states with completed or nearly completed statewide standards systems. Of those, 22 provided ongoing state funding for CTE, which probably helped these states accomplish the massive task of developing the CTE standards system and is likewise certain to help these states implement Perkins IV mandates. Fewer states ($n = 18$) had crosswalked their academic standards onto their CTE programs, although this group represented more than half of the states in Group A. Crosswalking is important because Perkins IV requires reporting of academic achievement using the state's *No Child Left Behind* assessment. If states outline which academic standards are addressed in CTE courses and programs, teachers are more likely to incorporate those standards and students are more likely to work on those standards and hopefully meet them.

Only 10 of the 30 states in Group A had aligned their CTE standards with postsecondary technical standards. As noted earlier, in two states (Florida, Ohio), there is only one set of CTE

Table 20

States with Complete or Nearly Complete Statewide Standards Systems, Selected Summary

<i>Group A States</i>	<i>Ongoing State Funding Provided</i>	<i>Academic Standards Crosswalked to CTE</i>	<i>Standards Aligned with Postsecondary Technical Standards</i>	<i>Assessment Ensures Implementation of Standards</i>
n = 30	n = 22	n = 18	n = 10	n = 11
Arkansas	--	Arkansas	Arkansas	--
Arizona	Arizona	Arizona	--	--
California	--	California	--	--
Connecticut	Connecticut	--	--	Connecticut
Delaware	--	Delaware	Delaware	--
Florida	Florida	--	Florida	--
Iowa	Iowa	--	--	--
Indiana	Indiana	--	--	--
Kansas	Kansas	Kansas	--	--
Kentucky	--	Kentucky	--	Kentucky
Louisiana	Louisiana	Louisiana	Louisiana	Louisiana
Massachusetts	Massachusetts	--	--	Massachusetts
Missouri	Missouri	Missouri	--	--
Mississippi	Mississippi	Mississippi	Mississippi	Mississippi
North Carolina	North Carolina	North Carolina	North Carolina	North Carolina
Nebraska	--	Nebraska	--	--
New Hampshire	--	New Hampshire	--	--
New York	--	New York	--	New York
Ohio	Ohio	Ohio	Ohio	Ohio
Oklahoma	Oklahoma	--	Oklahoma	Oklahoma
Oregon	--	--	--	--
South Carolina	South Carolina	--	--	--
Tennessee	Tennessee	--	--	--
Texas	Texas	Texas	Texas	--
Utah	Utah	--	Utah	Utah
Virginia	Virginia	Virginia	--	--
Washington	Washington	Washington	--	--
Wisconsin	Wisconsin	Wisconsin	--	--
West Virginia	West Virginia	--	--	West Virginia
Wyoming	Wyoming	--	--	--

Note. The sample consisted of the 30 states in Group A, that is, those states that have complete or nearly complete statewide standards systems.

standards that covers both secondary and postsecondary education. But the most common situation we found was that the postsecondary systems had not yet developed statewide technical standards. Several state secondary officials noted this, saying that the community and technical colleges in their state were “very resistant to standards,” or they had “just recently discovered CTE standards” or had “not taken as strict a stance” on standards, or were simply “not as standards-driven” as secondary education. Such attitudes among some postsecondary boards or institutions can be a hindrance to one of the goals of Perkins IV: the linking of secondary and postsecondary CTE into a seamless system.

Eleven Group A states reported that they used assessment as the means of ensuring that CTE standards were being implemented. This allowed these states to objectively monitor student achievement of CTE standards. These 11 states have an advantage over others as Perkins IV mandates begin, particularly regarding its requirement that states use valid and reliable measures to assess the technical skill achievement of their CTE students. Perkins IV states that core indicators of performance must, among other things, measure “student achievement on technical assessments that are aligned with industry-recognized standards, if available and appropriate” (Perkins IV, §113). The legislation does not specify whether these assessments should come at the end of a course or the end of a sequence of courses (generally known as *program areas*, but referred to as *programs of study* in Perkins IV). It remains to be seen whether and how the current assessment systems of these states will align with the intent of the legislation.

As can be seen from Table 20, four states (Louisiana, Mississippi, North Carolina, and Ohio) appear to be the farthest along in their development of a CTE standards system with respect to the variables presented here. They appear in every column of the table, representing important variables to examine in light of the Perkins IV legislation. Three other states came close to being in every column, but missed by one: Texas does not require CTE student assessments, and Oklahoma and Utah have not crosswalked their academic standards onto CTE.

Looking more closely at the standards systems themselves, another dynamic issue arose, especially in light of Perkins IV: the level at which the standards were written. Above, we note that 11 of the 31 states in Group A¹¹ wrote their standards at the program area level, and 15 wrote their standards at the course level. Among the 11 states in Group B, 6 were writing their standards at the program area level, and, interestingly, none were creating course-level standards. Of the 42 states that answered this question, then, the 17 states using standards at the level of CTE program area seem to be better situated to create and assess CTE programs of study as defined in Perkins IV.

The set of state CTE standards systems remains a work in progress. However, most states are in Group A, and this synthesis has shown that many if not most of these states could be said to be progressing toward goals that align well with the federal vision laid out in Perkins IV.

11 The analysis of the level at which the CTE standards were written was part of Question 1, which included information on the states that did not participate in the telephone interviews (see page 8). Therefore, the sample size here is 31, not 30.

PHASE 2 RESULTS: TEACHERS' USE OF THE STATE SECONDARY CTE STANDARDS SYSTEMS

The second phase of this study was designed to elicit from CTE teachers how their state's CTE standards are implemented within the local CTE curriculum and the CTE classroom. Developing a statewide CTE standards system is a massive undertaking. As Phase 1 has shown, there are many elements in the process, from bringing together stakeholders to aligning state standards with national trends. We asked state officials how they are ensuring implementation of the standards, but we also wanted to hear teachers' perspectives. A standards system is of no use if teachers cannot or do not use the standards to inform what and how they teach.

We conducted focus groups with CTE teachers in four states: Nebraska, Ohio, Texas, and Utah. Below, we briefly describe some salient aspects of these states' standards systems, then present the results of the focus group questions.

Nebraska

Nebraska calls its CTE standards *Essential Learnings* (ELs) to distinguish them from its academic standards system. The state recently finished developing standards for all CTE program areas in the state. Nebraska's academic standards have been crosswalked to its CTE programs. While representatives from its postsecondary system were involved in the development of its CTE standards, the ELs are not aligned with postsecondary technical standards. However, such work is underway. Nebraska plans to use statewide articulation agreements as the means of aligning the standards of the respective educational levels.

Nebraska reported being a strong local-control state, and as such, its CTE standards are not mandated but rather seen as resources for program enhancement. Local school districts are encouraged to use the standards to guide the development of the local CTE curriculum through professional development, technical assistance, and relationship building. Adherence to the standards is not part of the CTE program approval process. The state has no systematic way of knowing whether the standards are being implemented. Given the completely voluntary nature of the ELs, we chose to study the experience of CTE teachers in Nebraska in order to explore why teachers would implement standards if they were not required to do so.

Ohio

Ohio calls its CTE standards *technical content standards*. Ohio has had CTE standards for decades, although the system has been updated as necessary. The latest revision was completed at the end of 2007. Its technical content standards are intended to bridge secondary and postsecondary education, with a minimum span of Grades 11 through 14, creating a seamless connection between secondary and postsecondary technical standards. The standards system is also aligned with Ohio's academic standards.

Although Ohio also claimed to be a local-control state, local agencies must meet state requirements, including showing the use of standards, in order for CTE programs to be approved. However, specific curriculum is left to local agencies and districts to develop. In addition, once a program has received approval, no further updates are required. Our state contact reported that the creation of CTE standards that include postsecondary education motivates local agencies to develop a standards-based curriculum and increases the opportunities for students to qualify for postsecondary programs. Also, students must pass assessments as measures of technical attainment. Therefore the state agency does exert some control over local agencies regarding CTE, but our state contact said that the state agency attempts to avoid tensions regarding this role. We chose Ohio as a Phase 2 state because of its long history of having CTE standards. We wanted to explore how teachers are prepared to use CTE standards in a state with much experience with them.

Texas

Texas calls its CTE standards *Texas Essential Knowledge and Skills* (TEKS). There was postsecondary representation on the committees that developed the TEKS standards, but alignment with postsecondary technical standards is not yet complete. Texas is among those states that have crosswalked their academic standards into their CTE programs.

State law requires high schools to follow the TEKS system in order for CTE programs to be approved. The TEKS standards are in fact codified in state law (Texas Administrative Code, 1995). New CTE courses must be proposed to and vetted by the state, whereupon they may be offered elsewhere in the state. Texas monitors compliance through district self-reports and some monitoring visits. While there are no state-mandated assessments of the TEKS standards, the state does collect information on student licensure and certification outcomes (e.g., state cosmetology licensing). For these reasons, we classified Texas as a state-control state. We chose to interview Texas CTE teachers in order to explore CTE standards implementation in a state-control state.

Utah

In the 1990s, the Utah legislature mandated that up to 20% of state CTE funding would be allocated based on student performance. This led to the creation of a comprehensive CTE end-of-course assessment system called the Skills Certificate Program. The program is voluntary, but districts can qualify for incentive funding based on their students' performance on these state-administered, state-scored tests. (Utah's CTE standards were developed for each of these tests.) Given these incentives, all districts in the state participate in the assessment program, and teachers focus on the standards in their courses. The CTE standards are aligned with postsecondary technical standards but the state's academic standards have not been crosswalked onto CTE programs.

Utah requires the use of CTE standards in order for new CTE programs to be approved. Programs undergo yearly self-review and state visits on a six-year rotation. We chose Utah as our pilot site in part because, out of the states we had completed to date, it seemed to have one of the most comprehensive standards and assessment systems. We wanted to explore CTE teacher at-

titudes about standards in a state with a well-developed performance-based system. In addition, Utah was the only state-control state with CTE standards located in the West, bringing geographic diversity to the set of states chosen for Phase 2.

Teacher Responses

The following teacher responses and comments reveal how these teachers in Nebraska, Ohio, Texas, and Utah are connecting their respective state CTE standards to their CTE program curricula and integrating them within their classroom instruction.

Teacher Implementation of Standards:

How are you using your state's CTE standards in your classroom teaching?

The Nebraska teachers replied that the ELs provided guidance on what to teach. One teacher said the standards are “bare-bones objectives that we should be sure we are getting to,” but most of these teachers said that the state would do nothing if they did not use the standards. There have been several local curriculum mapping and standards alignment efforts. Some have taken the ELs and the national standards in their field and checked their course content against them. They were not required to do this, but felt it was an excellent way to organize their work. One teacher wrote a lesson plan software program with drop-down links to the state standards. It shows the ELs and the lesson plans in ways so that parents and others can view them. Other schools have linked the ELs to their district grading systems.

Many of the Ohio teachers reported that they document their use of the CTE standards in their lesson plans, which often must be turned in to their supervisors. One teacher said that he incorporates the standards into everything he teaches in his welding class because without the standards, the students would not be able to gain certification. Another teacher noted that due to their proximity to a community college, her students have taken advantage of articulation agreements that developed as a result of the secondary-postsecondary span of aligned standards.

Before the TEKS standards system, Texas used a set of CTE competencies, so CTE standards have been used in Texas in some form for many years. Several of the Texas teachers shared that they have always used either the competencies or the TEKS framework. One of the teachers who came from industry said that the TEKS helped her understand what *not* to include in her course development. Some districts have online lesson plans, and several teachers reported that during each curricular unit, all the teachers are “on the same page” as a result. After the development of a course, one teacher noted, there is little need to refer to the TEKS.

Teachers in Utah reported that the CTE standards are integrated into every aspect of their classroom instruction: the curriculum, lesson plans, student learning objectives, and the statewide assessment system. One of the teachers who had taught in another state said that when she came to Utah, she thought she was using the Utah standards like other teachers until she met with them over some curriculum. She noticed that they asked, “Now, what standard is that?” at every junc-

ture and that she could not respond: “And so then I realized that they really do follow them exactly, and so I started doing that more.” Another teacher noted that CTE assessment results have become part of the school accreditation process. Despite this all-encompassing nature of the CTE standards in Utah, teachers there said that they still had flexibility in the classroom. They were given the content of what they must teach, but they were not told how to teach it.

Presence of Standards in Curriculum:

Where does each standard show up in your curriculum/syllabus?

In Nebraska, several teachers stated that the ELs and the academic content standards are included in the class objectives. In some cases, the academic crosswalk has been done but the ELs have not yet been mapped onto the curriculum. Many of the teachers we interviewed shared that having the academic standards mapped onto their curricula provided an important tool for linking CTE to academic areas. Some CTE teachers have developed integrated teacher teams for work on student projects. For instance, a FACS teacher might work with a science teacher to teach the components of a food product.

Most of the Ohio teachers said that the standards are in their respective course syllabi and that they build their curriculum around the standards. The standards are also used to guide student projects, and one teacher stated that he used the standards as a daily agenda for students so that they know what they will be doing and why. Several teachers stated that their students work from a progress chart or binder where they monitor their own progress against the standards, so students are aware of the standards and where they appear in coursework as well.

In Texas, several teachers stated that the TEKS standards were written very broadly in order to allow for teacher interpretation, so that teachers could use them differently depending on their student population. One teacher said that she used available resources at her school (i.e., Web access, supplies) and her own creativity to integrate the standards into her lessons. The majority of the teachers we interviewed supported the idea of standards and the need to use them in their instructional materials and classroom teaching.

Utah teachers said that the standards and learning objectives are embedded throughout their program curriculum and syllabi. One teacher looks up the standards every year “because sometimes they’re revised a little bit with the testing that we do.” She uses the standards as she plans her scope and sequence. The Utah teachers were enthusiastic about a state Web site that contains the standards, objectives, sample assessments, teaching activities, and teacher-developed lesson plans. The teachers reinforced how valuable this resource was to them, providing them with ideas for improving their classroom instruction.

In all four states, these teachers knew where the standards could be found on their respective state DOE Web sites. Most of the teachers who were interviewed knew where the standards fit within their lesson plans and that it was important to explicitly present the standards to their students.

Professional Development in the CTE Standards:
How did you learn to integrate the standards into your teaching?

Most teachers in Nebraska credited state professional development as the primary means of learning to incorporate the CTE standards into their teaching. Several teachers responded that they learned through sharing and networking with other teachers across the state at such workshops, where teachers work in their area of expertise and create curriculum to share with others in their respective program areas. Other teachers reported that the state CTE conference is many teachers' primary opportunity to learn about the standards. One teacher noted that her district was ahead of the state because it had hired consultants to help them integrate the ELs into their courses.

The teachers interviewed in Texas said that they used their own creativity and initiative to integrate the standards into their teaching. School districts with resources to purchase curriculum can do so, others "make do," one teacher said. Another noted the importance of the Web in this regard, since Web-based resources are often available free of charge. They shared that each school system has different student populations and needs. The consensus was that a teacher had to teach the standards, but how they taught them varied.

In Ohio, two teachers credited their pre-service certification programs for teaching them how to develop curriculum using the standards. Professional development workshops and in-services were also mentioned. One teacher felt that she had learned how to integrate the standards more from collaborating with her peers than from formal professional development. Another teacher said that he had been involved in the standards development process, and had found the experience invaluable.

In Utah, teachers felt that the state had done a good job of providing training and resources around the standards and assessments. Some of the teachers we interviewed had been part of the original writing teams and this helped them understand the standards and how to implement them. One teacher reported that she and other CTE teachers had been asked to show the academic teachers at their school how to incorporate standards into their curriculum. She said that the academic teachers were astonished at the close monitoring that CTE teachers were doing, saying: "You mean you actually check that student off and see that they've done that?" So in Utah, CTE teachers were helping academic teachers integrate standards and objectives into their instructional practice.

Effect of Standards on Instruction:
How are the standards affecting your classroom instruction?

Several Nebraska teachers shared that the state standards provided the focus for what needed to be taught in the classroom. One teacher claimed that she now had more structure for her curriculum, but she tried to make sure she did not eliminate any of her favorite curricular pieces. Another teacher said that the ELs brought more structure, organization, and accountability. The standards have challenged teachers to increase rigor, challenge students, and tie what they are doing to science and other courses. "It helps create the link rather than just hoping it

happens,” he said. A third teacher noted that a teacher’s favorite curriculum does not necessarily make the students more prepared, and that it is good for teachers to have to examine what they are doing “versus what needs to be done.” Finally, a teacher felt that the ELs have provided CTE with credibility in the eyes of parents and advisory committees.

Two Ohio teachers recalled “life before standards,” when they felt there was no structure to the curriculum. Each teacher taught what they knew best. Now the curriculum is more focused and classroom instruction is more efficient. Another teacher reported that yes, she had had to give up some favorite lessons, but she has since added new materials. Now, before she adds anything, she asks herself, what is the purpose of adding this specific lesson? She is sure that student competence and ability have improved since her earlier days of teaching as a result of the intentional use of the standards in her lessons.

In Texas, teachers felt that bringing standards into their classroom instruction had led to improved consistency between schools. If students in a particular CTE program move from one school to another within the state, they could be assured of getting the same curriculum and would not have to start over at the beginning. Several teachers felt that the standards emphasize high-level thinking, and that this is a positive development. Overall, the Texas teachers we interviewed all agreed that they had seen improvement on their students’ state academic tests, which they attributed partly to the curriculum integration that they carry out.

In Utah, most of the teachers we interviewed could not remember a time when there had been no standards. One of the teachers, who had over 20 years of teaching experience, said that when she first started teaching, “there were some standards, but they were very, very minimal and there was not a statewide focus to them.” But the teachers with fewer years on the job could not describe how they had taught in the absence of standards, because they had never been without them.

Peer Understanding of Responsibilities for Standards:

Do the other CTE teachers at your school also know that the standards are part of what they must cover in their classes?

Most of the Nebraska teachers we spoke with reported that most CTE teachers in the state were aware of the standards, but one teacher felt that only the teachers who attended state conferences and workshops were aware of them. Some teachers stated that they have a “high quality professional development consortium” that provides a series of core workshops, many of which are focused on integrated academic and CTE content and the needs of the workforce. One teacher said that academic teachers were unaware of both the ELs and the fact that CTE teachers had integrated academic standards into their courses. She felt that academic teachers did not realize that CTE teachers were helping students achieve academic standards.

Teachers in Ohio felt that the teachers at their schools knew that the standards were an important part of what they taught. One agriculture teacher said that he had taught in different

areas of the state. While those areas differed in the type of agriculture taught, the standards had provided consistency. He stated that the standards are written generically enough for any teacher to teach them and that if a teacher can teach the standard, then it does not matter if the specific content is different.

Texas teachers' responses were similar to the Ohio teachers in that they felt that the standards provided a strong framework for all teaching. Most of the teachers they knew and worked with understood the importance of teaching the standards. One teacher stated that the standards had enhanced her classroom lessons and that her students seemed to be more engaged in the learning process as a result.

The Utah teachers reported that all of the teachers at their respective schools knew that the standards were an important part of their instruction. They all agreed that CTE teachers statewide were fully aware of the standards and how they were connected to the statewide assessments of student learning. One reason for the widespread knowledge was that all students were tested at the end of a course, and the test results were used to award funding to districts and schools whose students achieved at least 80% on both the performance and written tests. All school districts in the state participate in the statewide assessment process, meaning that CTE teachers were aware of the standards and were using them to prepare their students.

Effect on Student Enrollment:

Did student enrollment in CTE courses at your school change after the standards were instituted?

In response to this question, the Nebraska teachers generally agreed that there had been a large increase in CTE enrollment, but that this was not necessarily related to the ELs. The student population across the state had grown and with that came new CTE course offerings and more students taking CTE courses. Some teachers worried that the ELs may create a decrease in enrollment, though they had no evidence of this. For instance, an agriculture teacher said that because standards communicate to students that they will have to work in that course, students who wanted an easy course might choose "pottery" over CTE. Conversely, two other teachers commented that CTE standards might attract a different type of learner to CTE, a dedicated one that prefers organization, structure, and a career plan.

Texas teachers declared that to their knowledge, the TEKS standards had not had any effect on student enrollment. The majority of them said that the only enrollment change they had observed was a result of local district growth, whereby their class numbers had increased and their respective programs were enjoying renewed interest from students.

As with the other states, most of the Ohio teachers felt that the only change in student enrollment was an increase due to local population growth. However, one teacher stated that the retirement of teachers who did not like the standards had brought new teachers and new students to CTE. Another teacher felt that articulation through the secondary-postsecondary standards had attracted higher-functioning students who expected to go to community college. Finally, one

teacher reported that enrollment at a career center had decreased because home high schools had realized how popular Information Technology courses were and were offering them in block periods at the home high schools.

Utah teachers echoed the same sentiments as the teachers in the other states: Any increase in CTE enrollment was more likely a result of population growth rather than the implementation of standards. None of the teachers there linked enrollment changes to the standards.

Role of CTSOs:

Do CTSOs play any part in the implementation of the standards?

The Nebraska teachers' responses were mixed with respect to the role that career and technical student organizations (CTSOs) played in the implementation of CTE standards. Some teachers felt that although CTSOs were not designed to enhance Nebraska's ELs, their activities did reinforce the ELs. The state's FACS manual of curriculum and activities makes clear how activities such as CTSOs are related to the standards. One teacher used this manual to explain to parents and administrators how CTSOs relate to classroom content. She said that students can see the relationship clearly. Other teachers recognized the reinforcing role that CTSOs can play; however, they wanted to ensure that such activities did not drive the curriculum.

The overall response from the Ohio teachers was agreement that CTSOs play a very important role in implementing the standards within their classrooms, since the performance standards within each respective CTSO are aligned with the state CTE standards and are easily integrated within classroom instruction and out-of-class activities. Several teachers noted that the standards of some CTSOs were well-linked to certain standards such as employability and leadership. One teacher noted that she used CTSO competitive events to help students meet the state standards.

Texas teachers noted that their curriculum guides list CTSO activities that are aligned with the TEKS standards. However, they expressed concern that new class schedules with shorter class periods would limit time for students to learn about CTSOs and become members. One teacher noted that there were too many other activities competing for students' time. Teachers perceived that due to the shorter period of time students devoted to CTE, they were often unable to complete the required CTSO projects, and they did not have enough time to fully develop the leadership component.

In Utah, the teachers responded that the standards are not strongly connected to CTSO programs or activities. When asked if the leadership portion of a CTSO activity was used to assess the standards, teachers replied that CTSO activities were not part of daily classroom instruction and only took place after school or out of school, because there was not enough time for them in the regular classroom setting. However, one teacher knew of an advanced marketing teacher who incorporated CTSO projects into the curriculum.

Effect on Special Populations:

What has been the effect of implementing these standards on English Language Learners and special education students?

Very few teachers in Nebraska reported teaching even moderate numbers of English Language Learners (ELLs). In Nebraska, nine percent of the population speaks a language other than English, placing the state 29th among the 51 states (including the District of Columbia) on this measure (U.S. Census Bureau, 2006).

With respect to special education students, some Nebraska teachers said that when motivated, these students strive to succeed. Teacher practices included adapting pedagogy or assessment and reinforcing terminology. Several teachers said that teachers needed to explore the best ways to teach students and to make those adjustments. One teacher opined that the ELs were written broadly enough to accommodate the needs of most students. Another said that his curriculum had more content now, including hands-on learning activities that “put the standards to real life,” which helped special education students.

The teachers we interviewed in Ohio also did not have many ELLs in their classrooms. Ohio ranks 40th among the states in terms of speakers of other languages (U.S. Census Bureau, 2006), with six percent of its population speaking a language other than English.

Ohio teacher responses with respect to special education students were wide-ranging. One teacher stated that the CTE standards provided an objective way of showing the special education teacher exactly where the issues were if a student was not succeeding. Another teacher said he tried to get special education students through as many standards as possible, which was one of the most difficult things he did in the classroom. A third teacher noted that while her special education students might be able to achieve the standards with assistance to some degree, they may not be able to operate independently in job-related tasks.

In terms of ELLs, Texas ranks third among the 51 states (including the District of Columbia) on this measure (U.S. Census Bureau, 2006), with 34 percent of its population speaking a language other than English. One Texas teacher said that ELL students performed well in CTE because there was less pressure on them than there was in academic courses. Students felt less stress in her classroom. Many of the Texas teachers we spoke with described their approach with special education students as modifying their curriculum to address each student’s needs.

Utah ranks 19th among the states in terms of speakers of languages other than English (U.S. Census Bureau, 2006), at 14 percent of its population. Most of the Utah teachers we interviewed did not have ELLs in their classes. However, one teacher who did described the challenges of preparing these students for the business and marketing assessments. She watched as some students performed well on the hands-on projects but could not pass the written assessments. She knew how hard they had worked, but she also recognized that the state would not want students to have a state skills certification if they could not read the test.

Other teachers brought up their experiences with special education students. These teachers struggled between wanting the student to have the opportunity to earn certification and yet doubting that the student was as employable as the certificate would signal to employers. Credibility with industry partners was an issue. Teachers were apprehensive about students passing the state exam when the teachers were not convinced of their true employability.

Disadvantages/Challenges of Using the CTE Standards:
What is not working regarding the standards?

Teachers in Nebraska felt that the ELs were working, but because they are voluntary, they may not be working consistently across the state. The voluntary nature of the standards makes it difficult for students who move to another part of the state because there is not much commonality in what schools are doing. But mostly, teachers' concerns centered on achieving parity with the academic side of the school. Many reported that academic teachers get substitute teachers in order to attend professional development, while CTE teachers had to do it on their own time, often at their own expense. One teacher said that if the ELs were required rather than voluntary, academic teachers might come to recognize that CTE also has credibility and is not simply an "extra" class. The CTE teachers we interviewed knew that they helped students meet the academic standards and wanted to see academic teachers help their students meet the ELs.

In Ohio, the CTE teachers we interviewed felt that there were too many standards to cover in their classes, which have been getting briefer due to shorter class periods. Two of these teachers had independently divided the number of standards by the number of teaching days. One reported that he had four minutes per standard. Some of the standards seemed too demanding for high school students. Teachers felt that the standards' expectations were not realistic, not just for teachers and students, but for schools, which must acquire expensive equipment in order to teach some of them. One teacher said that colleges wanted well-rounded students, not students who had focused on something that had since become obsolete. Some of the teachers felt overwhelmed by the standards, especially when dealing with special education students. Even with the extra time allotted for special education students to take the assessments, some of these teachers felt that such students could not succeed.

Texas teachers were concerned about their ability to implement the standards when schools had access to vastly different levels of resources. This concern led to a discussion of curricular resources. Most teachers agreed that students had short attention spans and that many audiovisual resources were helpful, but such materials were often out of date by the time they arrived. One teacher dealt with this by showing only videos off the Web, but she recognized that not all schools had the resources to do this. One of the teachers who had come from industry felt that the state needed to work more with alternatively-certified teachers such as herself in order to help them better implement the standards.

The Utah teachers generally felt that there are no major problems with the standards system, stating that they were used to it, that it would be hard to get rid of, and that they had in fact

created it. They felt that teachers could cover all of the standards if they “narrowed down” the amount of content taught in a semester. One teacher noted that having to coordinate with post-secondary educators to include their standards in concurrent enrollment classes took time and flexibility away from teachers. Several teachers said that in order to teach the standards to their special education students, they had to “push pretty hard” throughout the semester.

Other Uses of the CTE Standards:

Do you use the standards for anything other than what the state requires?

In Nebraska, the state does not require teachers to use the ELs; thus in a sense, every use the Nebraska teachers mentioned would be an appropriate response. One teacher said that the ELs have been useful for starting a dialogue with academic teachers, and that teachers of all subjects might improve their practice through such communication, not just through teaching these particular standards.

Teachers in Ohio stated that the standards were used to create new courses, justify materials requisitions, and keep their advisory boards informed. For example, agricultural education teachers note what standards are being addressed with the planned use of the animal feed or bedding that they are requesting. They also attach the standards to field trip requests.

In Texas, teachers called the TEKS a “marketing tool” for students, parents, advisory boards, and employers. One teacher liked that everyone can see what they teach. A FACS teacher noted that she used the TEKS to describe the program to parents, who are unaware that it is no longer like the cooking and sewing classes that they recall from their own high school experience. In general, Texas teachers felt that the TEKS proved the “credibility” of their programs.

For the most part, Utah CTE teachers are using the standards as the state intended: to develop courses that prepare students for the state assessments. One teacher mentioned that she used the state test as her final exam. Others used old test items for class tests. Some teachers used the standards to communicate what their students are learning to local community college faculty, resulting in the development of additional articulation agreements between the institutions. Additionally, some teachers stated that they used the standards to show their advisory boards what their students are expected to achieve.

Phase 2 Synthesis of Results

The teachers we interviewed for this study were predominantly female with over 20 years of teaching experience (cf. Table 2). Most of these state-identified teachers in all four states felt that having CTE standards added rigor, credibility, and parity with academic courses, and they were glad of it. Given the skew in this sample toward more veteran teachers, it is heartening to learn that most are eager for professional development and to do the work it takes to implement standards. As the accountability movement progresses, we can expect that new teachers will be trained in the use of CTE standards, but discovering that veteran teachers are also behind the ef-

fort is a positive finding. This phase of the study could have revealed that CTE teachers resented state intrusion into their programs, but in fact the opposite was the case.

We heard this same sentiment from some of our state contacts in Phase 1—they claimed that CTE teachers in their states enjoyed the status that the existence of CTE standards conferred upon their programs. This was the case even in a state like Nebraska, where the standards were voluntary. It helps explain why Nebraska CTE teachers implemented their state’s CTE standards even though they were not required to do so.

In Ohio and Utah, teachers expressed a certain amount of stress over trying to cover all of the standards. Some felt that there were too many standards being required while schools were shortening class periods and increasing graduation requirements in other subjects, leaving CTE with less time in which to accomplish more. (It is important to note in this regard that Ohio and Utah were the two states in Phase 2 that assessed students on the standards to ensure their implementation.)

Ohio was an interesting case in that it considered itself a local-control state, but it (a) required that the standards be implemented, and (b) assessed students to ensure that implementation. In actuality, the CTE accountability system in Ohio is quite demanding. But because it has been in place (in one form or another) for many years, it is accepted. The teachers we spoke with reported that state teaching colleges had taught them how to develop curriculum around the standards, something which was just beginning to occur in Utah, according to the teachers we interviewed.

Texas, on the other hand, did not have CTE assessments. We asked the teachers whether the state should develop such tests. Overall, they were against the idea. “Students are tested enough,” one teacher said, to wide agreement. These teachers would prefer to see more certification and articulation than assessments. Several teachers offered that if a statewide assessment of the standards was mandated, they would adapt, but they would not be pleased. Their attitude was not unexpected for teachers in a state-control state—to adapt to state mandates.

Utah was classified as a state-control state, but it is a small state population-wise. Most of the teachers we spoke with were in some way involved in the development of the accountability system because all teachers were asked to submit test questions for possible inclusion. Also, the structure of its CTE administration puts CTE teachers closer to state activities than CTE teachers in larger states may be. These teachers may not feel as distant from state-level activities and decisions as they might have in a larger state. Instead, they were as involved as they wanted to be, and this might have helped Utah’s CTE standards system gain the widespread support it enjoys.

We asked about changes in enrollment since the institution of standards because we wondered whether students would note the presence of standards and avoid CTE in lieu of “easier” courses, such as the pottery course cited earlier by the Nebraska teacher. It was heartening to hear that this did not seem to be the case in any of these four states, all of which are experiencing higher CTE enrollments. In fact, several teachers reported the opposite: that having CTE stan-

dards was attracting higher-level students than in the past.

SUMMARY AND CONCLUSIONS

The results from this project provide a snapshot of the status of each state's secondary CTE standards system as of fall 2006. There was a great deal of variability in the types of standards systems developed or being developed across the 50 states and the District of Columbia. This variability appears to be driven by each state's unique philosophies, policies, and practices.

The information provided in this report may be useful to both federal and state government officials interested in improving CTE by implementing standards and assessments based on them. Because of the recent passage of Perkins IV and the new mandates that it lays out, our study conclusions are discussed in relation to that legislation. The results of this study can certainly inform future federal evaluation activities, provide states with information about other states' efforts and strategies, and more fully describe the CTE standards landscape for researchers in the CTE field and beyond.

We found that most states (31 of 51) have developed a statewide CTE standards system. The others were either in the process of developing statewide standards or have a locally developed standards system. This report places Louisiana, Mississippi, North Carolina, and Ohio among the forefront of states along the dimensions detailed in the body of the report—ongoing state CTE funding, integrated academic and postsecondary technical standards integrated with secondary CTE standards, and the use of CTE technical assessment measures—followed by Oklahoma, Texas, and Utah.

In other states, some of the dimensions we examined are likely to present challenges to their ability to meet the requirements of Perkins IV. It appears as though Perkins IV attempted to create parameters within which states could continue to develop their own unique secondary CTE programs while at the same time responding to increased accountability demands from the federal government. But Perkins IV necessarily allows and disallows various activities. Some states may have been developing systems under conditions or in directions that are now disallowed or discouraged. For instance, in many states, secondary and postsecondary education agencies have historically operated with surprisingly little communication with each other. It will be a great challenge for some states to create the seamless transition between high school and community college that is a goal of Perkins IV.

There were other indicators of challenges ahead as states move to implement Perkins IV. We found that few states have crosswalked their academic standards onto CTE programs, and similarly small numbers of states use technical skill assessments to measure student technical proficiency gained from CTE coursetaking. We assume that the number of states responding to these mandates will grow, but incentives might need to be provided to motivate states to move away from approaches undertaken before the details of Perkins IV were known.

Our attempts to differentiate between state- and local-control states led us to conclude that the dichotomy of state versus local control was less salient than anticipated in terms of explaining which states were further along in the development of a CTE standards system. We found little difference between many state- and local-control states, because even in local-control states, the state had a mechanism to enforce implementation: the state is the channel for federal dollars and can mandate policies in return for state and federal funding, such as requiring local education agencies to implement CTE standards or respond to specific elements of Perkins IV. However, it remains to be seen if states will implement strategies to move local practice in the direction of greater comparability across states.

With respect to the extent of teacher use of the standards, our nonrandom sample of teachers from four states with statewide standards systems all seemed satisfied with the standards in their states. They believed that having CTE standards added rigor, credibility, and parity with academic courses. Rather than driving students away, these teachers believed that having CTE standards had attracted higher-performing students to their classes. Teacher attitudes are important because the existence of CTE standards would not matter if teachers did not use them. Perkins IV will be easier to implement if CTE teachers value having CTE standards that hold teachers and students accountable.

POLICY RECOMMENDATIONS

The apparent variability of CTE standards systems across the country thwarts cross-state comparisons. Industry does not vary as much across states, and indeed, once the various naming systems and other superficial differences are stripped away, it is likely that many of the standards systems described in this report are more alike than different. We believe that standardizing the CTE standards (and assessments to the extent feasible) across states could be beneficial: for example, students moving across state lines would encounter similar expectations. Perkins monitoring would become much easier. Differences in outcomes across states could more easily be measured because there would be some comparability across states.

However, the reality is that the states have invested time and money in developing their systems and may be resistant to revisiting and changing their CTE standards systems merely to standardize them across states. Some states that are in the process of developing their standards systems reported that they are modeling their standards after other state systems. Other states have created new systems to fit their specific needs, contributing to the variability across the states.

It is unlikely that the federal government could “standardize the standards” across states in order to have comparable accountability systems. Perkins provides only a small amount of the total support for CTE compared to what most states and localities spend, so there is currently little incentive to change state practices that have taken great effort to develop. Perhaps the best course of action is to monitor and help states collect valid and reliable data during the early years of Perkins IV, examine those data, and then determine the next steps. Just as some states are finding to be the case with academic subjects, voluntarily adopting common standards across states

has benefits.¹² Perhaps states will recognize that similar benefits may accrue if they align CTE standards more closely across states as well. In short, many challenges remain to creating a more national system of secondary CTE.

DIRECTIONS FOR FUTURE RESEARCH

There are many directions in which to take the data presented in this report. These data could be further mined to discover more about the current state of CTE standards in the U.S. Research could continue to follow the development of the systems, because so many are still under development. As states begin to complete their CTE standards systems, a more stable baseline of information should become available.

There are fruitful avenues for research on the topic of CTE funding and its relationship to developing secondary CTE standards in accordance with Perkins IV. As noted, the states varied as to whether they provided ongoing state funding for CTE. Future research could monitor states that direct fewer resources to secondary CTE. Such work could determine whether continued inadequate funding impedes success in these states. Such work could also identify states that appear to meet Perkins IV mandates with less funding compared to other states, and learn lessons from them that can help all states.

As noted earlier in the report, next to nothing was known about CTE teacher attitudes about standards and the extent of their implementation of standards, especially in states that are only beginning to implement CTE standards for the first time. This study interviewed state-selected teachers in targeted states about their use of CTE standards. Future work could identify random samples of teachers to produce more generalizable information about how CTE teachers are responding to the increased focus on accountability.

In states where the standards systems are completed and being implemented, studies could be designed to determine if the standards are having an effect on student learning. This study has laid the groundwork to allow other researchers to identify states that have completed standards systems and that could participate in such a study of student outcomes. Teacher attitudes and practices could be examined in such a study as well.

Future research could also document the process of aligning secondary and postsecondary CTE standards. In many states, community and technical colleges are more locally controlled than K-12 districts. There may be no state board or umbrella organization for community colleges at the state level, or there might be only a confederation of autonomous colleges rather than a true board. All of these governance issues make it very hard to institute statewide occupational program standards or any other statewide effort. Studies could identify successful means of aligning secondary and postsecondary CTE based on the characteristics of a state's postsecondary education system (i.e., whether or not a state board exists).

12 See the American Diploma Project, in which 30 states are working to align secondary academic education: <http://www.achieve.org/node/604>

Finally, now that the standards systems have been documented, relationships can be explored and promising practices can be identified. Perhaps states in which secondary and postsecondary CTE standards and programs are aligned have more students continuing to postsecondary education than states without such alignment. Or perhaps states with standards written at a specific rather than broad level have an easier time certifying student proficiency. Future research could explore such relationships between standards and student outcomes and many others. All states could benefit from further research into promising practices with respect to the myriad issues in CTE standards development.

CONCLUSION

This report has established a baseline of information about state progress on and CTE teacher response to CTE standards. It has laid out several areas that pose challenges moving forward into the Perkins IV era. But CTE has already made a unique contribution to education by bringing industry input into secondary coursework through CTE standards.¹³ This is the end result of the activity that began after the publication of commission reports cited above, which decried the disconnect between school and the larger economy. A national set of structures has been developed in order to bring the education and industry sectors into greater alignment, and it could not have occurred with academic subjects or any other part of the high school curriculum except CTE. Industry has always played an advisory role for CTE programs. Now, however, standards and accountability, the language of academic subjects and *No Child Left Behind*, have been brought to bear on CTE. While it may seem obvious that industry would align more easily with CTE than with traditional academic subjects, this tends to get lost in discussions of the relative importance of various curricular areas present in high schools. At a time when high school program areas are being examined for their contribution to secondary education, CTE provides unique and important added value to the high school experience. The challenge now, with the development of standards systems and the passage of Perkins IV, is to move toward greater accountability and comparability in CTE without adding so many mandates that CTE can no longer provide that added value.

13 We thank Neil Knobloch for this insight.

REFERENCES

- Bailey, T., & Merritt, D. (1997). Industry skill standards and education reform. *American Journal of Education*, 105(4), 401–36.
- Carl D. Perkins Vocational and Applied Technology Education Act of 1990*. Pub. L. No. 101-392.
- Carl D. Perkins Vocational and Technical Education Act of 1998*. Pub. L. No. 105-332.
- Carl D. Perkins Career and Technical Education Act of 2006*. Pub. L. No. 109-270, §122.
- Commission on the Skills of the American Workforce. (1990). *America's choice: High skills or low wages!* Rochester, NY: National Center on Education and the Economy.
- Goals 2000: Educate America Act* (1994). Pub. L. 103-227, §509(a), 108 Stat. 200.
- Goertz, M. E., Duffy, M. C., & Carlson Le Floch, K. (2001). *Assessment and accountability systems in the 50 states: 1999-2000* (Report No. RR-046). Philadelphia: University of Pennsylvania, Consortium for Policy Research in Education. Retrieved October 31, 2007, from http://www.cpre.org/images/stories/cpre_pdfs/rr46.pdf
- Improving America's Schools Act of 1994*. Pub. L. No. 100-297.
- Kendall, J. S., & Marzano, R. J. (2004). *Content knowledge: A compendium of standards and benchmarks for K-12 education*. Aurora, CO: Mid-continent Research for Education and Learning. Retrieved October 31, 2007, from <http://www.mcrel.org/topics/products/78/>
- Klein, S. G. (2001). *Financing vocational education: A state policymaker's guide*. Berkeley, CA: MPR Associates, Inc. Retrieved October 31, 2007, from http://www.mprinc.com/products_and_publications/pdf/financing_vocational_education.pdf
- Klein, S., & Charner, I. (2005). *Assessing technical achievement in secondary career technical education: Overview of state assessment systems*. Washington, DC: MPR Associates, Inc. Retrieved October 31, 2007, from http://www.mprinc.com/products_and_publications/pdf/Assessing_Tech_Achieve.pdf
- McCaslin, N. L. & Headley, W. S. (1993). *A national study of approved state systems of performance measures and standards for vocational education*. Columbus: The Ohio State University. (ERIC Document Reproduction Service No. ED360474).
- Mid-continent Research for Education and Learning (McREL). (n.d.) *Standards for career education*. Aurora, CO: Author. Retrieved October 31, 2007, from <http://www.mcrel.org/topics/products/79/>
- Mechur Karp, M., Bailey, T. R., Hughes, K. L., & Fermin, B. J. (2005). *State dual enrollment policies: Addressing access and quality*. New York: Columbia University, Teachers College, Community College Research Center and Institute on Education and the Economy. Retrieved October 31, 2007, from <http://ccrc.tc.columbia.edu/Publication.asp?uid=295>
- MPR Associates, Inc. & Academy for Educational Development. (2005). *Statewide reporting on Perkins III performance measurement indicators*. Washington, DC: Academy for Educational Development.
- Murnane, R. J., & Levy, F. (1996). *Teaching the new basic skills: Principles for educating*

- children to thrive in a changing economy*. New York: Martin Kessler Books.
- National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform*. Washington, DC: Author.
- National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: Author.
- National Skill Standards Board. (2000). *Built to work: A common framework for skill standards*. Washington, DC: Authors. (ERIC Document Reproduction Service No. ED448269).
- No Child Left Behind Act of 2001*. Pub. L. No. 107-110.
- Rahn, M. (1994). *Profiles of the National Industry Skills Standards projects*. Berkeley, CA: National Center for Research on Vocational Education (MDS-881).
- Rahn, M. L., Hoachlander, G., & Levesque, K. (1992). *State systems for accountability in vocational education*. Berkeley: University of California, Berkeley; National Center for Research in Vocational Education.
- Rahn, M. L., O'Driscoll, P., & Hudecki, P. (1999). *Taking off! Sharing state-level accountability strategies*. Berkeley: University of California, Berkeley; National Center for Research in Vocational Education.
- Secretary's Commission on Achieving Necessary Skills (SCANS). (1991). *What work requires of schools*. Washington, DC: U.S. Department of Labor.
- Smith-Hughes Act of 1917*. Pub. L. No. 347.
- Snyder, T. D., Dillow, S. A., & Hoffman, C. M. (2007). *Digest of Education Statistics 2006*. Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved October 31, 2007, from <http://nces.ed.gov/pubs2007/2007017.pdf>
- Spill, R. (2002). *An introduction to the use of skill standards and certifications in WIA programs*. Washington, DC: National Skill Standards Board. (ERIC Document Reproduction Service No. ED465030).
- Texas Administrative Code [TAC], Title 19, Part 2, Chapters 118-126. (1995). Retrieved October 31, 2007, from [http://info.sos.state.tx.us/pls/pub/readtac\\$ext.ViewTAC?tac_view=3&ti=19&pt=2](http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=3&ti=19&pt=2)
- U.S. Census Bureau. (2005). *Glossary of basic geographic and related terms - Census 2000*. Retrieved October 31, 2007, from <http://www.census.gov/geo/www/tiger/glossary.html#glossary>
- U.S. Census Bureau. (2006). *Percent of people 5 years and over who speak a language other than English at home: 2006*. Retrieved October 31, 2007. from http://factfinder.census.gov/servlet/ThematicMapFramesetServlet?_bm=y&-geo_id=D&-tm_name=ACS_2006_EST_G00_M00603&-ds_name=ACS_2006_EST_G00_&-tree_id=306&-lang=en
- Wills, J. L. (1993). *Overview of education and industry skill standards in the United States: Volume I*. (Draft Report for the Institute for Educational Leadership), Washington, DC: U.S. Department of Education.
- Workforce Investment Act of 1998*. Pub. L. No. 105-220.

**APPENDIX A:
SAMPLE STANDARDS ACROSS GROUP A AND B STATES:
BUSINESS/MARKETING AND WELDING**

<i>State</i>	<i>Business/Marketing Standard</i>	<i>Welding Standard</i> <i>Note: GMAW = Gas Metal Arc Welding</i>
<i>Group A States^a</i>		
Alabama	Discuss basic economic terms.	Demonstrate fillet welds with GMAW process for carbon steel in various positions.
Arkansas	Economics Foundation. <i>Knowledge:</i> Discuss tangible and intangible resources. <i>Application:</i> List the differences between tangible and intangible resources.	<i>Duty:</i> Demonstrating GMAW. <i>Task:</i> Perform single pass fillet welds, all positions, on carbon steel, using short circuit transfer.
Arizona	<i>Standard:</i> Explore economic principles related to marketing.	<i>Standard:</i> Set up and use GMAW equipment. <i>Measurement Criterion:</i> Make fillet welds, all positions, on carbon steel.
California	<i>Standard:</i> Students understand the key economic concepts that affect small business ownership. <i>Subcomponent:</i> Students understand common ways in which fiscal and monetary policies affect the economy.	<i>Standard:</i> Students understand various types of welding assembly processes. <i>Subcomponent:</i> Students use welding tools and equipment to combine or join materials, resulting in a finished product that meets AWS standards.
Connecticut	For Marketing Education, the Web site refers teachers to the National Marketing Education Association Web site. No standards are listed on the state Web site.	<i>Standard:</i> Students will gain knowledge and develop skills required for Agricultural Power, Technical, and Structural Systems. <i>Application:</i> Students will explain the operation of electric and oxy-fuel welding and cutting processes and perform procedures.
Delaware	<i>Content Standard:</i> Students will analyze, interpret, and make decisions based on financial product, market, and customer data. <i>Indicator of Achievement:</i> Students will list and describe the elements involved in purchasing goods and services and in determining prices.	<i>Content Standard:</i> Students will disassemble, assemble, repair, inspect, and evaluate machinery and equipment systems. <i>Indicator of Achievement:</i> Students will perform disassembly and assembly procedures.

<i>State</i>	<i>Business/Marketing Standard</i>	<i>Welding Standard</i> <i>Note: GMAW = Gas Metal Arc Welding</i>
Florida	<i>Outcome:</i> Identify Economic Principles. <i>Benchmark:</i> Explain concepts of Economics and Economic Activities.	<i>Outcome:</i> Perform electric metal bonding operations. <i>Benchmark:</i> Demonstrate basic procedures for safely adjusting and operating an arc welder, selecting a rod, striking and maintaining an arc, welding in various positions, and clamping.
Iowa	<i>Standard:</i> Understand the economic principles and concepts fundamental to marketing. <i>Benchmark:</i> Explain the concept of economic resources.	<i>Standard:</i> Understand and demonstrate the use of materials in manufacturing. <i>Benchmark:</i> Demonstrate material combining processes.
Indiana	<i>Standard:</i> Students understand fundamental business/marketing administrative concepts that affect business decision-making. <i>Performance Expectations:</i> Students explain marketing and its importance in a global economy.	<i>Standard:</i> Students perform welding and cutting processes on a variety of industrial metals. They read and interpret blueprints and mechanical drawings and complete projects to meet industry standards. <i>Performance Expectations:</i> Students perform GMAW.
Kansas	Explain the U.S. type of mixed economy and its strengths and weaknesses.	Make fillet weld using GMAW metal electrode inert gas (MIG) welding equipment.
Kentucky	<i>Standard:</i> Understand the economic principles and concepts fundamental to marketing. <i>Subcategory:</i> Explain the concept of economic resources.	Students will develop and demonstrate skills and knowledge with GMAW.
Louisiana	<i>Standard:</i> Understand basic economic concepts.	<i>Standard:</i> Arc Welding Principles and Practices. <i>Benchmark:</i> GMAW—Make fillet welds, all positions, on plain carbon steel, using short circuit transfer.

State Secondary CTE Standards: Developing a Framework out of a Patchwork of Policies

<i>State</i>	<i>Business/Marketing Standard</i>	<i>Welding Standard</i> <i>Note: GMAW = Gas Metal Arc Welding</i>
Missouri	<i>Competency:</i> Understand economics and economic activities. Explain the importance of understanding economics.	<i>Objective:</i> Create gas metal arc welds on pipe/plate consistent with industry and safety standards. <i>Task:</i> Make weld in 3G position, vertical up, with carbon steel 3/16” or thicker.
Massachusetts	<i>Strand: Technical Skills:</i> Define economic concepts and principles. Identify common economic systems.	Demonstrate the GMAW Process. Fillet weld in all positions using the GMAW Process.
Mississippi	<i>Competency:</i> Introduce economic fundamentals. Describe types of economic systems.	Demonstrate the ability to set up and perform GMAW/FCAW (flux-core arc welding) operations. Apply safety practices and welding procedures, and perform multiple pass fillet welds and V-groove welds on mild steel and/or other materials.
North Carolina	<i>Competency:</i> Understand the economic foundations of marketing management. <i>Objective:</i> Explain the relationship between economic measurements and economic growth.	<i>Competency:</i> Demonstrate GMAW. <i>Objective:</i> Weld GMAW multi-pass fillet welds on plate in all positions.
Nebraska	Economics and Personal Finance <i>Essential Learning:</i> Students will understand basic economic and financial principles in order to make wise domestic and global economic decisions related to their personal financial affairs, the successful operation of organizations, and the economic activities of the country. They will demonstrate competency by applying economic and personal financial reasoning to individual, business, and government practices.	<i>Welding:</i> Demonstrate ability with gas arc welding. Weld a lap joint with a multiple-pass, fillet weld on carbon steel, stainless steel, and/or aluminum plate in various positions. Interrupt root pass at mid point and restart arc.

<i>State</i>	<i>Business/Marketing Standard</i>	<i>Welding Standard</i> <i>Note: GMAW = Gas Metal Arc Welding</i>
New Hampshire	Understand the economic principles and concepts fundamental to marketing. <i>Economic Systems:</i> Explain the types of economic systems and the relationship between government and business of each.	Demonstrate a groove weld in various positions, in accordance with the ANSI/AWS (American National Standards Institute/American Welding Society) standards.
New York	<i>Indicator:</i> Students demonstrate an understanding of business, marketing, and multinational economic concepts. <i>Sample task:</i> Students explain the meaning of basic business and global economic terms.	<i>Indicator:</i> Students demonstrate knowledge of planning, product development and utilization, and evaluation that meet the needs of industry. <i>Sample task:</i> Understand product development and use specified techniques for producing a product or service (tools, machines, materials, and processes).
Ohio	Apply basic economic concepts. <i>Key Indicator:</i> Explain the concept of economic resources.	Demonstrate GMAW of mild steel.
Oklahoma	<i>Duty:</i> Economics. <i>Task:</i> Explain the nature of economics.	<i>Duty:</i> Demonstrate Knowledge of GMAW Principles and Practices. <i>Task:</i> Make fillet welds, all positions, on carbon steel plate and pipe in 2F position-flat, multiple pass, surfacing welds.
Oregon	<i>Statement:</i> Integrate social studies skills into marketing, sales, and service to better understand customers and the economic environment in which they function. <i>Indicator:</i> Acquire an understanding of fundamental economic concepts to obtain a foundation for employment in marketing careers.	<i>Agriculture: Statement:</i> Apply principles of service and repair to mechanical equipment, structures, etc. <i>Indicator:</i> Demonstrate safe and proper techniques in using hand and power tools in construction/fabrication.
South Carolina	The student will be able to discuss economic resources.	The student will be able to perform GMAW multiple-pass open-root V-groove welds on plate, using solid or composite wire and shielding gas, in multiple positions.

State Secondary CTE Standards: Developing a Framework out of a Patchwork of Policies

<i>State</i>	<i>Business/Marketing Standard</i>	<i>Welding Standard</i> <i>Note: GMAW = Gas Metal Arc Welding</i>
Tennessee	<i>Standard:</i> Students will demonstrate an understanding of economic concepts and principles in a global economy.	<i>Standard:</i> Students will make fillet and groove welds on plain carbon steel in all positions using a short-circuit, spray transfer, or pulsed-arc GMAW process. <i>Indicator:</i> The same in this case.
Texas	The student knows business concepts and how business satisfies economic needs. The student is expected to explain the impact of an international economy on business activities.	The student uses advanced tools, equipment, and technical processes to complete complex projects. The student is expected to manufacture complex products. OR The student demonstrates mechanized agriculture repair skills. The student is expected to explain the operation of electric and oxy-fuel welding and cutting processes and performs procedures.
Utah	<i>Standard:</i> Students will have an understanding of the world of marketing. <i>Objective:</i> Students will explain marketing and its importance in a global economy.	<i>Standard:</i> Student will use GMAW processes. <i>Objective:</i> Student will use Short Circuit Transfer to make fillet welds in flat position on plain carbon steel.
Virginia	<i>Task:</i> Understanding Economics and Economic Activities. <i>Competency:</i> Describe the major economic activities related to marketing.	<i>Task:</i> Demonstrating GMAW. <i>Competency:</i> Perform single pass fillet welds, all positions, on carbon steel, using short circuit transfer.
Washington	<i>Performance Task:</i> Students will acquire, interpret, and communicate economic information and demonstrate an understanding of its importance in the success of a business in the free enterprise system. <i>Competency:</i> Students will describe the nature of economics and economic activities.	<i>Task:</i> Weld, braze, cut, as appropriate with arc, oxy-acetylene, and MIG welders, and other equipment. <i>Competency:</i> Set up, adjust, operate, and maintain MIG welding equipment.

<i>State</i>	<i>Business/Marketing Standard</i>	<i>Welding Standard</i> <i>Note: GMAW = Gas Metal Arc Welding</i>
Wisconsin	<i>Content standard:</i> Students will demonstrate knowledge of the role of marketing within a free enterprise system. <i>Performance standard:</i> Students will explain economic concepts that affect consumers and business in a free enterprise system.	<i>Content standard:</i> Students will be able to define problems, gather information, explore options, devise a solution, evaluate the outcome, and communicate the results. <i>Performance standard:</i> Select and apply appropriate processes to alter the characteristics of material to make it useful in different situations.
West Virginia	<i>Standard:</i> Describe the importance of Economic Principles in today's society. <i>Objective:</i> Discuss advantages and disadvantages of different types of economic systems.	<i>Standard:</i> Perform GMAW using short circuit transfer. <i>Objective:</i> Make fillet welds, all positions, on plain carbon steel.
Wyoming	Standards are general to all CTE courses and are not specific to any discipline.	
<i>Group B States^b</i>		
Idaho	For Marketing Education, the Web site refers teachers to the National Marketing Education Association Web site. No standards are listed on the state Web site.	<i>Task:</i> Weld lap joints in all positions. <i>Performance Objective:</i> Given the proper GMAW welding equipment, personal safety equipment, and demonstrations, weld lap joints in all positions in a safe and competent manner.
Illinois	N/A	<i>Standard:</i> Make fillet weld in flat position using spray transfer on carbon steel. <i>Performance Criterion:</i> Fillet weld in flat position using spray transfer on carbon steel plate is completed according to standard part print, job specifications, and applicable welding codes.
Vermont	<i>Competency:</i> Apply economic principles. <i>Subcompetency:</i> Recognize economic activities.	<i>Competency:</i> Perform GMAW tasks. <i>Subcompetency:</i> Flat position GMAW: short-circuiting method (dip-transfer) and/or spray arc method.

State Secondary CTE Standards: Developing a Framework out of a Patchwork of Policies

<i>State</i>	<i>Business/Marketing Standard</i>	<i>Welding Standard</i> <i>Note: GMAW = Gas Metal Arc Welding</i>
New Mexico	<i>Standard:</i> Assess entrepreneurship/ small business management career information to enhance opportunities for career. <i>Benchmark:</i> Employ financial knowledge and skill to make business decisions.	<i>Standard:</i> Produce a product to satisfy customer desires. <i>Benchmark:</i> Execute process to produce new product. <i>Performance Standards:</i> Perform production sequence safely.
Georgia	<i>Performance standard:</i> Integrate social studies skills into marketing, sales, and service to obtain an understanding of customers and the economic environment in which they function. Analyze basic economic concepts and describe the impact of economics on marketing.	<i>Performance standard:</i> Perform GMAW multipass fillet welds on plate using carbon steel wire and shielding gas in various positions.
Hawaii	None Yet	None Yet
Maine	N/A	<i>Duty/task:</i> Performs GMAW multipass fillet welds on plate, using carbon steel wire and shielding gas in various positions. <i>Performance Criteria:</i> Weld is deposited with complete fusion; is free of overlapping, cracking, and porosity; and meets specifications.
North Dakota	<i>Standard:</i> Identify the economic principles and concepts fundamental to business operations. <i>Topic:</i> Explain the concept of economic resources.	<i>Standard:</i> GMAW Plate – Identify and explain the equipment and weld types that apply to GMAW. <i>Topic:</i> Identify and explain fillet welds. <i>Competencies:</i> Practice flat and horizontal fillet welds in various positions.

State Secondary CTE Standards: Developing a Framework out of a Patchwork of Policies

<i>State</i>	<i>Business/Marketing Standard</i>	<i>Welding Standard</i> <i>Note: GMAW = Gas Metal Arc Welding</i>
Nevada	<p><i>Content Standard:</i> Students will demonstrate an understanding of basic economic concepts, economic systems, cost-profit relationships, economic indicators/trends, and international concepts.</p> <p><i>Performance Standard:</i> Students will demonstrate an understanding of basic concepts of economics.</p> <p><i>Indicator:</i> Explain the concept of economic resources.</p>	<p><i>Content Standard:</i> Students will identify, select, set up, and demonstrate the use of GMAW equipment.</p> <p><i>Performance Standard:</i> Students will demonstrate GMAW using appropriate safety techniques.</p> <p><i>Indicator:</i> Students will demonstrate the ability to weld in various positions to complete an assigned project.</p>
Rhode Island	No marketing program in RI. Related programs include Business Administration, Finance, and Retail/ Wholesale sales and services.	No welding program in RI.
South Dakota	<i>Standard:</i> Identify and explain the economics and marketing concepts of the free enterprise system in a global market.	<i>Indicator:</i> Demonstrate competencies with GMAW equipment on various metal thickness, joint design, and welding positions, using a solid wire electrode.

Note. The sample consisted of the 42 states (including the District of Columbia) in Groups A and B.

^aGroup A states have complete or nearly complete statewide standards systems.

^bGroup B states are in the process of developing statewide standards systems or have unmaintained systems.