

RECOMMENDATIONS TO IMPROVE THE COLLECTION OF PERKINS PLACEMENT DATA IN SOUTH DAKOTA

Submitted by:

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BACKGROUND

In December 2006, the Office of Vocational and Adult Education (OVAE), U.S. Department of Education, invited state directors of vocational education to submit requests for individualized technical assistance to improve the quality of their career and technical education (CTE) accountability systems. In response, the South Dakota Department of Education, Office of Career and Technical Education, submitted a request for support in identifying strategies for assessing technical skill attainment of secondary and postsecondary CTE concentrators.

Following conversations with Mark Wilson, State Director of Career Technical Education, MPR researchers agreed to review the literature and information identified by the Next Step Working Groups subcommittee on technical skill attainment to identify cost-effective approaches for collecting skill attainment data at the secondary and postsecondary levels. In particular, state administrators are seeking guidance on the feasibility of adopting or adapting assessments developed by other states, and issues associated with using state approved, locally developed end-of-course or end-of-program exams.

To assist the state in improving performance reporting, this paper details strategies for developing technical skill assessments at the secondary and postsecondary levels.

SECONDARY TECHNICAL SKILL ATTAINMENT

The 2006 reauthorization of the Carl D. Perkins Career and Technical Education Act (Perkins IV) mandates that states report on the technical skill attainment of students concentrating in career and technical education (CTE) coursework. To assist states in preparing for their state plan submission, the Office of Vocational and Adult Education (OVAE) released non-regulatory guidance on student definitions and measurement approaches for each core indicator. This guidance includes descriptions of possible constructions for measure numerators and denominators, along with suggested measurement approaches.

Non-regulatory guidance is based upon recommendations provided by state representatives participating in OVAE's on-going Data Quality Initiative (DQI). As part of this effort, OVAE periodically convenes state policy and information system experts to consult on measurement alternatives and their policy implications. States opting to follow the non-regulatory guidance were assured that their measurement approach would be approved by OVAE during state plan review. States proposing differing definitions or measurement approaches were directed to describe how these alternatives would be valid and reliable.

Recognizing that state measurement approaches may need refinement, OVAE is permitting states to reconsider their student definitions and measurement approaches during the 2007–08 transition year. States will need to finalize their measures prior to submitting their final five-year state plan, due in spring 2008.

To support states in assessing technical skill attainment, OVAE has issued non-regulatory guidance for the construction of the measure.

- *Numerator:* Number of CTE concentrators who passed technical skill assessments that are aligned with industry-recognized standards, if available and appropriate, during the reporting year.
- *Denominator:* Number of CTE concentrators who took the assessments during the reporting year.

Technical Skill Assessments: Measurement Approaches

At the OVAE-sponsored Data Quality Initiative Institute, held May 18–19, 2007 in Savannah, Georgia, federal staff described three acceptable reporting approaches. The so-called *Gold Standard* encompasses (1) national skill assessments, developed by third-party agencies; (2) state or national credentialing or licensing exams, typically used to control entry into a profession; or (3) standardized statewide assessments, created by state administrators for local agency use.

The *Silver Standard* applies to state approved, locally developed assessments, in which the state develops formal procedures for reviewing tests developed by secondary teachers or postsecondary faculty, and the *Bronze Standard* applies to grade point average and program completion. However, OVAE will only permit states to use proxies of skill assessment for an

interim period, after which states will be required to institute some form of technical skill assessment.

Gold Standard 1: National Skill Assessment

A number of third party vendors have developed or are in the process of creating technical skill assessments that can be used for Perkins reporting purposes. To assess testing options, the OVAE-sponsored Next Step Working Group (NSWG)—comprised of a subset of state CTE directors and data analysts—sponsored a series of conference calls to consult with test developers.

Third party vendors presenting on NSWG calls included representatives of the National Occupational Competency Testing Institute (NOCTI), Ohio State University, SkillsUSA, VTECS, WorkKeys, and XPAND Corporation. Vendor assessments include:

- *NOCTI*—has developed exams to assess the technical skills associated with an occupationally specific area. To date, the organization has profiled 87 job ready assessments (e.g., welding, practical nursing) and produced 3 general workforce readiness exams. NOCTI is also exploring developing pathway level assessments within cluster areas, and has contracted with Connecticut, New York, Pennsylvania, and Virginia to provide customized services to meet state testing needs. For additional information log onto: <http://www.nocti.org>
- *Ohio State University*—the Center on Education and Training for Employment has developed Webxam to administer on-line technical assessments. Modular tests are used to assess a unit of instruction within a program, and full-length tests to assess a program itself. Tests are delivered on-line, can be accessed 24 hours a day, 7 days a week, and offer score results immediately following test completion. Webxam is primarily an assessment delivery system, meaning that states must still develop or adopt their own assessments; however, Center staff has experience creating workforce assessments and can assist in CTE test design. Webxam is currently used for Ohio’s statewide CTE technical assessment program and to administer some national certification tests. For additional information log onto: <http://www.webxam.org>
- *SkillsUSA*—is working to align national content standards associated with its skills contests with academic content standards, and to create assessments that document entry-level knowledge and skills required of workers in specific occupations. Students meeting standards will receive a portable, employer-recognized certificate. SkillsUSA is planning to develop content standards for 46 technical areas, with a first set of 6 assessments launched in July 2007. Subsequent plans call for 20 additional assessments to be introduced in 2008 and another 20 in 2009. For additional information log onto: <http://www.skillsusa.org>
- *VTECS*—is creating a multi-state system to identify, house, validate, and deliver industry-based competencies, standards, item banks, assessments, scenarios, and customized curriculum packages. Information is maintained in VTECS DIRECT 5, a software database system that allows users to customize CTE competencies, instructional

elements, assessment items, and career cluster information for over 80 occupational titles. VTECS is working to develop competencies and standards around which cluster assessments can be developed, and is currently contracting with Arizona to develop a statewide assessment system. For additional information log onto: <http://www.vtecs.org>

- *WorkKeys*—is designed to assess individuals' general work readiness skills across a number of dimensions. Assessments exist in 10 content areas (e.g., Reading for Information, Applied Mathematics, Business writing), and are intended to measure basic skills that workers require for the workplace. WorkKeys can be used to assess whether individuals have the abilities needed to succeed in the labor market or in a specific occupational area. To do so, WorkKeys has profiled the skills required for success in any of 10,000 job titles, ranging from accountant to welder. These skill levels have been cross-referenced with WorkKeys skill levels that an individual must have to perform successfully. By comparing occupational job profile data with an individual's WorkKeys test scores, an educator or employer can reliably predict whether someone has the tools needed for success. For additional information log onto: <http://www.act.org/workkeys>
- *XPAND Corporation*—provides information technology services to federal, state, and local governments using web-based approaches. Consultants with the company are experienced in the use of industry-based certification, and can work with states to identify appropriate certifications for students enrolled in CTE programs or to develop customized testing products. Since testing is performed via the Internet, XPAND is able to offer cost-effective web-based services that can help control state testing costs. For additional information log onto: <http://www.xpandcorp.com>

There are several advantages to using industry-developed assessments for local use. Because teams of industry and education experts work alongside trained exam developers to structure exam content and organization, occupational assessments generally have high validity and reliability. Test development is also the responsibility of the vendor, meaning that states need not invest resources to update exams to keep pace with industry innovations. Moreover, the state may avoid ongoing administrative costs associated with scoring and reporting results, since contractors typically provide these services as part of their testing fee.

Subcontracting assessments does mean, however, that the state will incur an ongoing, usually per student charge for administering exams. For example, Pennsylvania, which contracts with NOCTI, reimburses districts for up to \$25 per test. In the 2004–05 program year, a total of \$540,000 was spent on student occupational competency assessment. This included expenditures for NOCTI tests and reports, NOCTI benchmarking costs, reimbursement for other approved tests, and regional workshops on occupational testing.

Another consideration is the specificity of third party exams, which, in many cases, focus on specific occupational areas. Since occupationally focused exams are designed to assess skills required of entry-level workers, these assessments are often not useful for assessing foundation level skills associated with a cluster area. Tests may also be too advanced for use at the secondary level, where instruction often focuses on more general skills.

As a small state with limited finances, it is unlikely that third-party assessments are a financially viable approach to measuring CTE concentrator skill attainment. For example, if South Dakota were to adopt the NOCTI testing approach, the state would incur an annual cost approaching \$75,000, or roughly 75 percent of the state's Perkins leadership funds. According to state staff, this would deplete state discretionary funds, leaving limited resources for other important initiatives, such as program of study development. At the eligible recipient level, paying for student assessments would likely exceed the allocations available to most small consortiums. Due to the relative small amount of funds available, even larger districts would be faced with spending a majority of their Perkins funds for assessments, leaving little funding for program improvement. As such, even if valid and reliable third-party assessments were already available in all program areas, South Dakota would likely have difficulty affording them.

Gold Standard 2: State or National Licensing Exams

In its non-regulatory guidance, OVAE recommended that states identify program areas for which a state has existing technical skill assessments. Recognizing that exams are not available in all areas, OVAE recommended that states detail the program areas for which a state has technical skill exams and the estimated percentage of CTE concentrators that would be reported in the measure. States were also asked to supply a plan and timetable for increasing the coverage of programs and students in future years. Regulatory guidance does not, however, stipulate that states achieve a minimum testing threshold.

To comply with OVAE guidance, South Dakota could default to existing credentialing or certification exams administered by state licensing agencies or national industry associations. For example, the state might choose to report on all students who took an assessment developed by the National Institute of Machining Skills, Inc. (NIMS) to assess machining and metalworking. Use of such licensing or certification exams may be most appropriate at the postsecondary level, where students are more likely to acquire the advanced skills needed for marketplace success.

In lieu of endorsing a specific assessment, the state could allow CTE administrators to select their own assessments from a state-identified pool of exams. For example, the Texas Education Agency, the regulatory agency overseeing credentialing, procedural and testing requirements, and instructor qualifications for credential award, has created a guide detailing existing credentials.. Although the state does not endorse any particular certificate or license, the guide is intended to support districts in promoting students' professional development. Educators are encouraged to use the guide, in consultation with local business and industry partners, to determine the types of certifications or licenses that would be most beneficial to students and employers. For additional information log onto: (http://www.tea.state.tx.us/cte/3_13_07TX_CERT_GUIDE_2007.pdf).¹

¹ As noted on the June 7, 2007 NSWG call, XPAND Corporation has circulated a proposal to develop a national certification exam database, with development costs of between \$50,000 and \$75,000 per state. Given that OVAE and other groups are working to identify cost effective strategies for designing technical skill assessments, South Dakota may wish to wait until further guidance is obtained before signing on to such an effort. Given that the XPAND Corporation database will only contain a listing of national exams, it is not clear that the cost for accessing the service will justify the expense.

While use of industry exams can provide an objective, industry-rated assessment of student skill attainment, states have reported that third party vendors are often unwilling to share exam results. Moreover, because students in some industries do not sit for exams until completing a field apprenticeship that may extend years beyond program completion, such as those pursuing National Automotive Technicians Education Foundation certification, use of national certificates can complicate reporting. Finally, since not all programs have licensure or certifications associated with them, states may be unable to expand their testing programs, as called for in OVAE's non-regulatory guidance, by relying solely on these types of exams. As such, while use of national or state credentialing exams might be economically feasible, it is unlikely that South Dakota could use this approach to report on more than a fraction of eligible students.

Gold Standard 3: State Developed or Approved Technical Skill Assessments

South Dakota could choose to develop its own end-of-course or end-of-program assessments to align with state CTE standards. States embracing this approach have often created a large number of assessments to achieve program coverage. For example, North Carolina has developed roughly 130 end-of-course curricular blueprints and assessments, while Utah, which offers end-of-program assessments, has established 133 occupationally specific exams. In contrast, Kentucky has confined assessments to 19 content areas, in most cases using one exam to address multiple pathways in a career cluster area. For example, the state assessment for the Manufacturing Career Cluster area encompasses 10 career majors, including welding, machine tool technician, and industrial electronics.²

Assessment design typically begins with a state establishing CTE standards and competencies within designated program areas. The process usually entails the convening of a committee of state and local CTE administrators, CTE educators, and business and industry representatives. Committee members are tasked with identifying program content standards if none exist, or verifying that existing standards are valid. This may involve surveying or interviewing employers to determine statewide needs, as well as reviewing national and other states' standards systems.

Once CTE competencies are identified and validated, test development begins.³ This requires clarifying the type and specificity of assessments, as well as the instrumentation needed to assess student skills (i.e., direct assessment versus scenarios). To inform development, committee members may review existing national assessments that may be appropriate for use in the state. Once test items are identified, draft exams are piloted to assess their validity and reliability.

² Detailed information on North Carolina's VoCATS system can be viewed at: <http://www.dpi.state.nc.us/cte/vocats/briefing/index.html>. Utah's testing program is profiled at: <http://www.schools.utah.gov/ate/Skills/skills.htm>. Details of Kentucky's testing system is available at: <http://www.kde.state.ky.us/KDE/Instructional+Resources/Career+and+Technical+Education/Skill+Standards+and+Assessments/>

³ It is beyond the scope of this paper to document the process used to develop statewide exams. The interested reader is directed to Richard Erickson, *Key Questions in Developing Large-Scale, Standards-based Assessment Systems*; Ron McCage, *A Plan to Provide Technical Assistance to the Arizona Standards and Assessment System*; and Ron McCage, *Providing Industry-Validated Competencies, Standards, Item Banks, Assessments, and Scenarios Across State Lines*.

While creating state exams can increase buy-in among educators, drafting state standards and assessment can be an expensive, time-intensive process. Given the large number of CTE courses or programs that are offered, developing a statewide, occupationally specific testing program would require that South Dakota invest substantial resources in identifying and validating technical skills, in designing assessments that align with these standards, and in creating a test bank from which questions could be selected based on program standards. The state would also need to budget to periodically update test elements to keep the system in line with industry developments.

Alternatively, South Dakota could simply choose to adapt an existing state exam developed by another state. While this would spare state administrators the task of identifying standards and assessments, which would presumably be validated by the test developer, the state would still need to review and, where appropriate, revise content standards and associated test questions to reflect its own program standards.

South Dakota administrators should also be aware that preliminary efforts are underway to develop foundation level assessments associated with broad career cluster areas. While it is unlikely that these tests will be available in the near term, it is neither cost effective nor advisable for states to undertake their own test development efforts. According to Kim Green, Executive Director, National Association of State Directors of Career Technical Education Consortium, states might be better served waiting until a single set of cluster standards and assessments are developed for a cluster area. States could then choose to adopt or adapt identified standards and test items from these assessments to reflect their own needs. This would have the benefit of lowering development costs and increasing assessment comparability across states. While South Dakota would face some development costs in transitioning a national foundation-level assessment to fit state needs, these costs would be associated with a broad cluster area, covering multiple occupations, rather than a discrete occupational area.

Technical Skill Assessments: Silver Standard Approaches

OVAE has identified state approved, locally developed assessments as satisfying the *Silver Standard* for test development. These include end-of-course or end-of-program exams that are created by secondary teachers or postsecondary faculty to address statewide content standards or locally identified, industry recognized skills.

Silver Standard 1: State Approved, Locally Developed Technical Skill Assessments

States unwilling to invest in third party assessments or to design their own statewide testing systems could recognize locally developed assessments as a measure of technical skill attainment. To ensure these assessments are valid and reliable, states would need to establish a formal process to judge locally developed assessments for their technical rigor, as well as their alignment to state or locally identified content standards.

Implementing this process would likely require that states establish a committee to develop test submission guidelines, along with procedures for reviewing proposed assessments and test administration strategies. Where statewide standards do not exist, the committee would also be tasked with reviewing locally identified standards for their relationship to marketplace needs, a process that could include consulting with state or national employers and industry associations to provide expert guidance, or requiring that local agencies submit evidence that their industry advisory board has approved their proposed program standards and assessments.

It is beyond the scope of this technical assistance project to identify all of the steps that South Dakota would follow to create a state approval process for locally generated assessments. However, the state would likely need to address the following issues:

1. *Assessment committee membership*—How many individuals should be on the committee and from which sectors should membership draw (i.e., employers, unions, secondary and postsecondary CTE educators, state administrators)? Also, what type and level of expertise should members hold? Other issues include when and how the group will meet, and how viewpoints from multiple fields will be solicited.
2. *Identification of CTE content standards*—Do statewide content standards exist and, if not, to what level of skill specificity should learners be held at the secondary and postsecondary levels? How should national standards be integrated into local program design? How will local agencies justify their adoption of program standards and what criteria will be used to judge proposed standards? Is there a role for industry experts or consultants in the standards review process?
3. *Assessment types*—What forms of local assessments are acceptable? For example, should proposed assessments include a performance component or are paper-and-pencil exams sufficient? If written exams are administered, what types of questions are acceptable (i.e., multiple choice versus open response)? How will the validity and reliability of testing instruments be documented?
4. *Alignment of standards and assessments*—What procedures should local agencies follow to demonstrate that their assessments align with state or locally identified standards? Will agencies be required to submit an example of each assessment, or complete forms and assurances that their assessments meet state-established criteria?
5. *Assessment administration and scoring*—What are acceptable approaches for administering exams? How is test security ensured? Are students given a time limit for tests or project-oriented work? Who will score assessments and what criteria and passing thresholds will be used to rate project work?

Establishing a standardized, auditable assessment review process can help ensure that local agencies are employing consistent testing methodologies that comply with federal intent, while maintaining local control over curriculum and assessment. Creation of an oversight committee that develops and polices assessment guidelines and establishes testing and scoring controls would also assure that all students are held to industry recognized standards. This would

presumably present less of an issue at the postsecondary level, where programs are subject to accreditation reviews to assess curricular relevance and delivery.

Establishing a state committee could also help institutionalize the creation of technical skill assessments, potentially helping to ease state adoption or adaptation of secondary foundation level cluster assessments, which are currently in development by test developers.

Although subjecting local programs to an approval process would help establish statewide controls, it is likely that local exams would still lack some level of uniformity. Documenting local assessment practices would also impose an additional cost and reporting burden at the state and institutional levels, although much of this expense would be frontloaded during system development. Even so, it is likely that these costs would be a fraction of those associated with assessment design and test administration, were an agency to create its own, or subcontract for, a statewide assessment system, and as such, South Dakota administrators may wish to look carefully at this approach as a means of complying with Perkins technical skill reporting requirements.

Silver Standard 2: Alignment of Secondary Assessments with Postsecondary Content Standards

State representatives attending the DQI in Savannah suggested the possibility of using postsecondary standards as a basis for developing secondary technical assessments. Although OVAE did not provide guidance on this issue, this approach is profiled because it could potentially promote articulation between secondary and postsecondary programs of study, as called for in the States' Career Clusters Initiative.

With this approach, secondary educators would collaborate with postsecondary institutions, either statewide or locally, to align secondary program standards and assessments with those used in associated postsecondary programs. Ideally, secondary technical exams would assess student attainment of technical and academic skills that entering postsecondary students would be expected to have mastered. This approach would also require that states develop a process for approving locally generated standards and assessments, or guidelines and criteria that teams of secondary and postsecondary educators would follow when proposing technical skill assessments.

In Summary

Fiscal and human resource constraints limit South Dakota's options in drafting technical skill assessments to comply with new Perkins reporting options. Although it might be possible for the state to contract for the services of a third party test developer or to develop its own statewide technical skill exam, doing so would draw substantial resources from state leadership or local program funds, and would compromise the delivery of other Perkins services. While the use of national certification exams could offer some benefits, problems associated with student coverage and obtaining test results from certification agencies complicate measure reliability.

The use of state approved, locally developed assessments may provide the state with the most cost effective, accurate approach to monitoring CTE concentrators' skill attainment. Permitting educators to oversee test design also supports local control, while ensuring the state a minimal level of data validity and reliability within and across sites. Adopting this approach will require, however, that the state develop a formal process and a clear set of guidelines to structure local planning.

Given that technical skill assessment design is still in its infancy, South Dakota administrators should plan to move slowly and deliberately in responding to new Perkins accountability requirements. State staff would be wise to monitor national developments, with an eye toward adopting or adapting national standards and/or technical skill assessments currently in development for use at the state level.