

Chapter 3

Measurement of Occupational Competencies

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Chapter 3

Measurement of Occupational Competencies

What students learn in school is at least as important an indicator of program quality as how well they do in the labor market after graduation. OTA examined the suitability of using various types of occupational competency tests for vocational program assessment. One key assumption implicit in the use of these tests is that the knowledge and skills they measure are correlated with one or more of the objectives of vocational education. Although vocational education has many objectives, the preparation of young people for productive and gainful employment ranks high. Thus, if mechanical ability, for example, is known to have a positive impact on the average earnings of workers in certain occupations, then performance on a test of mechanical competency can provide a measure of the quality of the educational program in which that competency was taught. (Training students in obsolete skills is not the sign of a quality program, no matter how well the skills are taught.) OTA examined the relationship between performance on a test of occupational competency and subsequent labor market outcomes.

Linking certain developed abilities to the probability of attaining various objectives of schooling, however, is insufficient for performance evaluation purposes. The second key assumption in the use of competency tests is that they provide information about the effects of school programs. Ideally, a test's items would be keyed exactly to the content of specific courses, and performance on the test would be an accurate gauge of how well those courses were taught. In practice, however, no test can fully sort out the effects of prior knowledge, prior experience, and innate ability from participation in a specific course or program.³⁵ And just as placements and earnings are insufficient indicators of

35. This argument is developed in greater detail in Alexandra K. Wigdor and Wendell R. Garner (eds.), *Ability Testing: Uses, Consequences, and Controversies*, Part I: Report of the Committee (Washington, DC: National Academy Press, 1982). See esp. pp. 25-29.

program quality because they confound program effects and individual or environmental attributes, scores on even the most detailed, content-specific tests provide only partial measures of program quality. OTA explored the relative merits of various types of tests — many of which are already available and in use in different parts of the country — for performance measurement.

APTITUDES AND COMPETENCIES

While aptitude tests are designed principally for assigning individuals to jobs and training programs for which they are well suited, their questions are often quite similar to those that appear on tests of achievement. As the National Academy of Sciences explained in a 1982 report: “. . . aptitude tests, intended to predict what a person can accomplish with training, and achievement tests, intended to measure accomplished skills . . . * are not fundamentally different. They both measure developed ability, they often use similar questions, and they have often been found to yield highly related results.”³⁶

OTA explored the possibility of applying a widely-used test of occupational aptitude as part of a comprehensive system of program evaluation.³⁷ The Armed Services Vocational Aptitude Battery (ASVAB) is a 3-hour test administered by all branches of the military to determine eligibility of recruits and to match recruits to

36. Ibid., p. 27. The National Academy explains how aptitude tests can be used to measure achievement: "**A** test for mechanical aptitude would be included in a battery of tests for selecting among applicants for pilot training since knowledge of mechanical principles has been found to be related to success in flying. A similar test would be given at the end of a course in mechanics as an achievement test intended to measure what was learned in the course. Of course, it would not be surprising to find that many people who did well on one of the tests would also do well on the other, nor that the achievement test **could** also be used to predict flying success." Nevertheless, experts in the field of testing and measurement caution that, on the continuum between ability and achievement, tests designed to measure the latter are typically better suited for performance evaluation than those intended primarily for measurement of aptitude or innate ability.

37. This section draws heavily on John Bishop, "Occupational Competency as a Predictor of Labor Market Performance," OTA contractor report, Dec. 12, 1988.

jobs. The original purpose of the ASVAB was to predict the success of new recruits in technical training; and since 1980 a major research effort has been under way to explore the uses of the ASVAB in predicting job performance.

The test battery consists of 10 subtests in mechanical comprehension, auto and shop information, electronics information, clerical checking (coding speed), numerical operations (a timed test of simple arithmetic), arithmetic reasoning, mathematics knowledge (covering the high school curriculum), general science, word knowledge, and paragraph comprehension. Unlike other competency tests that focus on specific occupations, ASVAB technical subtests assess broad technical ability and trainability for jobs involving the operation, maintenance, and repair of complicated machinery. The ASVAB does not measure specific proficiencies within these general technical clusters. The mechanical comprehension, auto and shop knowledge, and electronics subtests correspond roughly to technical trades, and performance on these tests can be interpreted as an indication of competency in the technical arena. Because the ASVAB is currently administered annually to 1 million high school students in 14,000 schools, as a tool in career counseling, there is interest in the possible uses of the ASVAB in performance evaluation.

Earnings and Employment

OTA first sought to determine whether vocational subtests of the ASVAB — and by extension, other similar paper-and-pencil tests of occupational aptitude — are valid as early indicators of labor market success in civilian occupations. The analysis is based on data from the National Longitudinal Survey.³⁸

38. During the summer of 1980 the Armed Service Vocational Aptitude Battery was administered to 94 percent of the youth sample of the National Longitudinal Survey (approximately 11,000 respondents). The earnings, wages, and unemployment rates for this **sample** were collected in **followup** surveys conducted in each year through 1986. Multiple regression models were used, to control for weeks employed, school attendance, years of schooling, highest level of schooling completed, years of college education, minority group status, census region, and unemployment in the local labor market — all

As shown in figure 3-1, ASVAB subtests measuring electronics information and mechanical, auto, and shop knowledge, as well as coding speed and numerical operations, are positively correlated with wage rates and earnings, and negatively correlated with unemployment, among young men. For men in the National Longitudinal Survey sample, there is a very substantial economic return to technical knowledge as measured by these subtests, largely because men with vocational education are likely to take jobs in the mechanical, blue collar, and manufacturing sectors in which employers value technical knowledge.³⁹

Job Performance

Although economists often assume that earnings are directly correlated with job performance and productivity, there is also evidence of divergence between wage rates and performance.⁴⁰ It is therefore important to ascertain whether ASVAB scores correlate as well with measures of productivity as they do with earnings and employment.

To address this question OTA used a dataset in which ASVAB subtest scores were related to a hands-on measure of job performance.⁴¹ The findings from this analysis

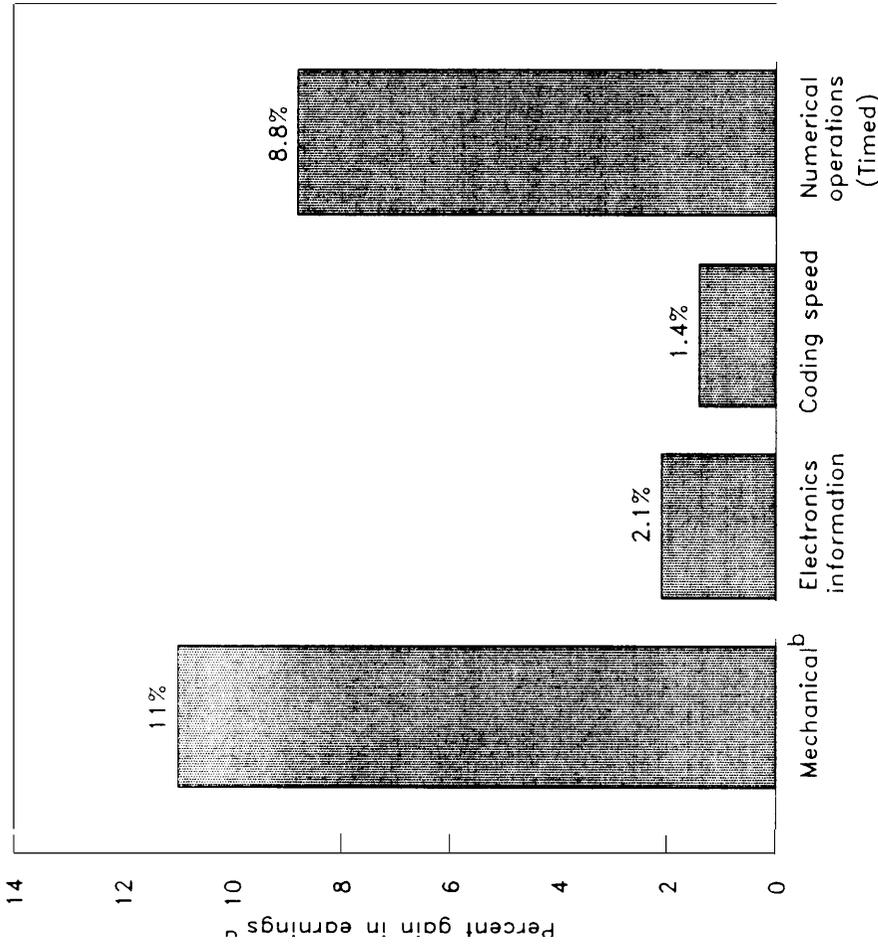
factors that could influence earnings and employment — as well as academic ability, as measured by subtests on arithmetic reasoning, mathematics, science, word knowledge, and paragraph comprehension. See *ibid.*, for detailed model specifications. Also see Mark J. Eitelberg et al., *Screening for Service: Aptitude and Education Criteria for Military Entry* (Washington, DC: U.S. Department of Defense, Manpower, Installations, and Logistics, September 1984).

39. Except for coding speed, the Armed Services Vocational Aptitude Battery (ASVAB) vocational **subtests** did not correlate with women% labor market performance. These differences can be explained by the fact that women who do not attend college are still employed mostly in retail sales and clerical jobs where the technical skills included in ASVAB are considered less relevant by employers. See Bishop, *op. cit.*, footnote 37.

40. One study found that an individual who is 20 percent more productive than average earned only 1.6 percent more in initial wages; after 1 year of employment, the more productive employees received only 4 percent more in nonunion firms (with about 20 employees), and experienced no wage advantage at all in unionized establishments (with more than 100 employees) or in large nonunionized firms (more than 400 employees). See John Bishop, "The Recognition and Reward of Employee Performance," *Journal of Labor Economics*, vol 5, No. 4, **part 2**, October 1987, pp. S36-S56.

41. See Bishop, *op. cit.*, footnote 37; and Milton **Maier** and Francis Grafton, U.S. Army

Figure 3-1
 Correlation Between Occupational Competencies and Earnings
 of Young Men, 1984-85



Armed Services Vocational Aptitude Battery (ASVAB) Subtest

- ^a Percent gain in earnings per one standard deviation increase in ASVAB subtest score
- ^b Mechanical Comprehension and Auto and Shop Information subtests equally weighted

SOURCE: Office of Technology Assessment, based on National Longitudinal Study data reported in John Bishop, "Occupational Competency as a Predictor of Labor Market Performance," OTA contractor report, 1988.

further support the validity of the ASVAB as a predictor of labor market performance. A small increase in all four of the nonclerical vocational subtests is correlated with an increase in job performance in skilled technical jobs, skilled electronics jobs, general maintenance jobs, mechanical maintenance jobs, missile battery operations, food services, combat occupations, and field artillery. Because many of these jobs have civilian counterparts, the analysis suggests that technical competencies measured by the ASVAB are valid determinants of worker productivity in many civilian jobs.

Program Evaluation: Caveats

OTA's analyses show that the ASVAB, and by extension similar paper-and-pencil tests of technical aptitude, can provide early indications of future labor market performance. For the purposes of this Background Paper, however, a central question is whether the ASVAB can provide sufficient information about how measured vocational abilities are acquired. For if such tests are to be useful in program evaluation, it must be possible to trace test performance to participation in specific school programs. OTA finds that the ASVAB does not meet this criterion, and that it could not become the sole or primary instrument of performance measurement, for the following reasons:

- ASVAB vocational subtests (in auto and shop information, mechanical comprehension, and electronics information) consist of a total of 70 questions, to be answered in 39 minutes. They do not provide sufficient information to judge an individual's technical proficiency in the tested skill areas.⁴² In addition, the ASVAB does not cover many

Research Institute for the Behavioral and Social Sciences, "Aptitude Composites for the ASVAB 8, 9, 10," Research Report 1308, unpublished manuscript, May 1981.

42. An analogy with academic testing is illustrative. A general science test that consists of 40 questions, 10 each on physics, chemistry, geology, and biology could provide a **measure** of general scientific knowledge without indicating anything about knowledge in any of the specific subjects.

skills that are taught in American secondary school programs. For example, there would be no way to measure an individual's competency in cosmetology, a field that attracts many women students.

- Participation in high school vocational education programs is only weakly correlated with the ASVAB scores.⁴³ Given the brevity of the vocational subtests this result is not terribly surprising. It suggests that using ASVAB scores to evaluate programs would require extensive additional data to control for student background, socioeconomic status, and other correlates of test performance. These data are costly to obtain, and the requisite statistical techniques are highly sophisticated.

For measurement of program performance, then, the ASVAB is an inadequate instrument. However, because it does predict future labor market performance quite powerfully for some students, it can be useful as part of a broad package of evaluation and program improvement. In particular, OTA considers the following potential uses of the ASVAB worthy of additional research:

- The ASVAB can be used to diagnose students' weaknesses in skills that are known to be important for certain occupations. For example, composite scores in word knowledge, paragraph comprehension,

43. Taken together with findings of strong correlations between the Armed Services Vocational Aptitude Battery (ASVAB) performance and earnings, on the one hand, and with other studies demonstrating strong correlation between vocational program participation and earnings in training-related jobs, OTA concludes that ASVAB cannot capture all the correlates of participation in vocational programs. Simply put, additional vocational education contributes to labor market success in ways that cannot be measured by ASVAB. For example, participation in certain vocational programs may be attractive to employers regardless of an individual's specific competencies; or students might learn skills in school that are not included in the test items.

arithmetic reasoning, and mechanical comprehension are used by the military to fill a wide range of jobs in the “health, social, and technological” fields. The extent to which a school uses the ASVAB to diagnose individual learning needs could be an indicator of that school’s responsiveness to broad labor market demand. Note that this use of the ASVAB would include reliance on its academic subtests, which would signal the potential value of raising the academic abilities of vocational students.

- Because ASVAB scores correlate strongly with “trainability,” and because a large number of firms provide ongoing education and training to their employees, test results could be useful in industry. To be effective, however, this use of the ASVAB would require employers to make greater use of test results and other student information than they currently do. It would be particularly important for employers to look at grades in specific courses as well as composite test scores.
- Finally, the ASVAB could provide information to be used in conjunction with other measures of performance. Early ASVAB scores, e.g., of incoming 10th graders, could establish baseline differences in schools in terms of their students’ prior abilities and knowledge. Such information could become very valuable in making later comparisons of earnings and employment of graduates of various schools. In addition, comparing early scores with scores after several years in a vocational curriculum could provide information on net gains in knowledge and skills attributable mainly to program characteristics. The validity of this use of the ASVAB has not been explored by OTA.

OCCUPATIONAL COMPETENCY TESTING: STATE ACTIVITY

According to a recent survey, 13 States are engaged in testing the occupational competencies of vocational and technical students and 7 States are in the process of developing competency tests for vocational students. An additional 11 States are considering development, and 20 have indicated that they have no plans to initiate statewide vocational competency testing (see figure 3-2).⁴⁴

Many States have formed consortia to pursue the development of competency-based curricula and tests in a cost-effective manner⁴⁵ (see box 4, page 61). Although several of these consortia only produce occupational tests, some also produce materials that list the duties, tasks, and tools needed for a broad range of jobs. Often these materials are based on detailed job analyses conducted by small groups that include vocational educators, experts currently working in the job, and/or by representatives of associations that represent the profession with which the job is identified. In some cases, tests are then developed to reflect the duties, tasks, and skills identified through these job analyses and packaged into tests or made available to States, schools, or districts in the form of banks of items. Educational agencies “buy into” these item banks, and can then select those items that match their vocational programs. Often, States purchase the test banks and make them available to local education agencies, who can then customize the tests to match their local curricula.

44. Rebecca Love-Wilkes, “1988 State of the Art Report on Statewide Student Competency Testing in Vocational and Technical Education,” prepared for National Network for Curriculum Coordination in Vocational-Technical Education and the Southeast Curriculum Coordination Center, 1988.

45. Competency-based education systems develop curricula relevant to requirements for working in modern society, and attempt to certify student progress on the basis of demonstrated performance in some or all aspects of those requirements. Theoretically, such demonstrations of competence are independent of time served in formal education settings. See G. Grant et al. (eds.), *Competence: A Critical Analysis of Competence-based Reforms in Higher Education* (San Francisco, CA: Jossey-Bass Publishers, 1979), p. 6.

While these types of tests can provide more accurate information about program quality than tests of generic abilities, they are more time-consuming to develop; it is possible that by the time a test is administered, the skill it measures is obsolete. In addition, because they emphasize proficiency at highly specific occupational skills, these tests could discourage educators from exploring ways to teach broadly applicable skills that could benefit students in the long run. It is important to keep in mind the tradeoffs inherent in the application of various types of tests.

Occupational competency tests assess skills (tasks) and knowledge found in specific jobs (e.g., changing fuel filters or preparing schematic drawings), and are different from tests of academic competency (e.g., solving algebra problems or writing essays), and tests of employability skills (e.g., knowing how to conduct a job search, completing a job application, or exhibiting acceptable work habits.)

Tests can take several forms: paper and pencil objective tests (e.g., multiple choice, true-false), paper and pencil subjective tests (e.g., writing sample), performance tests (e.g., observations of student performance of a task), portfolio assessment (e.g., judging a body of work, such as photographs of hair styles completed over a semester's work). Each of these assessment modes has strengths and weaknesses, depending on how they are applied. While performance testing is generally more faithful to the actual task as performed in a job situation, it is costly to administer.

The level of cognitive complexity is an important characteristic of competency testing. Some skills or concepts are more complex than others and therefore more difficult to measure. At one extreme are measures of simple recall skills, such as "list the types of fuses and breakers. " More complex measures are needed to assess an individual's ability to orchestrate and apply various configurations of simpler skills, as in the following item from a widely used test: "Redesign entrance service requirements for building expansion, renovation or installation of heavy powered equipment not accounted for under original construction."⁴⁶

HOW GOOD ARE OCCUPATIONAL COMPETENCY TESTS?

If occupational competency tests are used to assess the effectiveness of a secondary school vocational program, it should be able to gauge the competence of students who are in that program. The test should also be a valid indicator of the skills and knowledge used in the job for which the vocational program is training students. Obtaining estimates of ‘job validity’ requires input from those working in the jobs in question. Those who determine the composition of the test should be familiar with the jobs as currently practiced in that region, and should be active enough in the profession to be aware of trends and directions the profession is likely to take, particularly with respect to technological advances.

In some instances, the composition of the committees that determine what will be measured on these tests may be too dependent on vocational teachers who may not be as aware of the current job tasks and responsibilities or projected changes as someone currently working in the profession. A test developed with the exclusive input of teachers may neglect modern techniques and technology, which would undermine its validity for predicting job placement or performance.

One approach to determining a test’s job validity is to compare the performance of experts — who have been performing the job successfully for several years— with that of novices — students beginning their training in a field or workers in a different occupation. Examining the ways in which experts answer specific test items gives important information about the validity of inferences from the responses of novices: for example, if an individual who is an expert automobile mechanic errs on a question about brakes or transmissions, that could signal the need to revise the question before

46. From Vocational Technical Education Consortium of States (V-TECS), *Vocational Education Program Courses Standards, Industrial Education* (Atlanta, GA: 1988).

including it on a test administered to recent graduates. But expert-novice validity checks are seldom conducted by the agencies engaged in occupational testing at the secondary level.

A longer-term approach to evaluating validity would involve administering the test to vocational completers and then comparing job placement, productivity, performance, and wages of those who scored well on the test with those who scored poorly, in both the short term and the long term. OTA finds some evidence that specific occupational competency tests correlate quite strongly with job performance. An analysis that synthesized the results of 262 studies of occupational competency tests⁴⁷ concluded that the average correlation between test scores and supervisors' ratings of job performance was .51 (very high). In fact, this correlation was higher than that of any other predictor variable (such as ability tests, psychomotor tests, interviews, and biographical inventories). Other studies have found similar results⁴⁸ suggesting that occupational competency examinations appear to be valid predictors of job performance and promotion probabilities.

There are a number of risks inherent in any testing effort. One cited frequently is the incentive to "teach to the test": if teachers prepare students by teaching them to answer the items on a specific test, then the test provides a measure of how well students have learned answers to those test items but remains ambiguous with respect to students' learning of the more general skills and knowledge. However, this tendency should be distinguished from the case in which the use of a test is intended to influence instruction. For example, the New York State Department of Education has specified that all students must be proficient in certain occupational skills and knowledge, and has developed tests to measure those skills. Educators are responsible for tailoring their

47. M.D. Dunnette, American Petroleum Institute, "Validity Study Results for Jobs Relevant to Petroleum Refining Industry," unpublished manuscript, 1972.

48. See, for example, J.E. Hunter, "Causal Analysis, Cognitive Ability, Job Knowledge, Job Performance, and Supervisor Ratings," *Performance Measure and Theory*, S. Lundy et al. (eds.) (Hillsdale, NJ: Lawrence Erlbaum, 1983).

instruction so that it coincides with what is tested. In this case, poor test performance by students could reflect the failure of their teachers to meet defined curricular objectives. In general, tests used to evaluate the effectiveness of an instructional program should only measure what is taught. If there is a mismatch, then either the test or the instructional program should be revised.

One way to overcome the problem of teaching to the test (or what is also referred to as “measurement driven instruction”) is to specify the domains of knowledge, skills, and concepts that are to be measured. The merits of these specifications are noteworthy: they allow test developers to produce a bank of consistent items that all measure a given skill in the same way. More important, these specifications can be given to teachers and curriculum developers so that they know what will be on the test without seeing specific test questions. However, very few test developers prepare such domain or item specifications, which are costly and intellectually demanding. It is not possible to ascertain the extent of teaching to the test that occurs in vocational programs without intensive case studies, and OTA was not able to determine whether the testing efforts reviewed for this Background Paper used item or domain specifications.

The subtleties of testing can be easily blurred in the rush to evaluate and improve programs. And because tests can create such powerful incentives for change — on the part of students, teachers, and schools — their application warrants close attention. The process of developing competency tests involves substantial input from those working in the field. [f developed properly these tests can guide vocational instruction so that it meets the needs of employers and students. When linked to data reflecting labor market needs, the tests are useful for evaluating the relevance of vocational curricula to current and anticipated conditions. However, OTA finds that there are too many different occupations in which schools are training students for there to be a viable national competency test. The Federal Government could effectively work together with the

States in developing test guidelines and exploring new test methodologies. There is much to be gained from continued Federal support for research into the theory and practice of competency testing.

State Activity in Development of Competency Tests

Several States and organizations are involved in developing and/or marketing occupational competency testing systems available for use in vocational education:

National Occupational Competency Testing Institute (NOCTI')

NOCTI develops and provides occupational testing services for teachers, students, and industry. At the present time, 47 States and the District of Columbia participate in NOCTI, and 23 States use NOCTI tests for certifying vocational teachers. Both written and performance tests are used to assess each occupation with tests covering factual knowledge, technical information, understanding of principles, and problem-solving abilities. The performance tests are administered in laboratory, industrial, or clinical settings and consist of work assignments that require 2 to 5 hours to complete. NOCTI test are only available for use at the end of a program, not for ongoing assessment during an instructional program.

Costs of assessment vary, ranging from \$1 per student in architectural design to \$45 per student in construction masonry. At the present time, 34 Student Occupational Competency Achievement Tests have been developed and validated. An additional 23 have been validated through field testing and are being prepared for distribution, and 11 are in

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the process of validation. NOCTI provides scoring and report services.

Ohio Vocational Education Achievement Test Program

The Ohio Vocational Assessment program is a joint venture between the Ohio Department of Education% Division of Vocational and Career Education and the Instructional Materials Laboratory at Ohio State University. As with the other testing efforts, the Instructional Materials Laboratory (IML) derives test items. from an analysis of the duties and tasks involved in each occupation. These duty and task lists are developed by committees comprised of vocational teachers, State education staff, and a nonteacher member of the occupation. In addition, industry representatives throughout the State are surveyed for their comments on the task lists. Mathematics, science, and communications competencies relevant to the occupational competencies are included in the task analyses published by IML. Tests are comprised of two parts with approximately 175 questions for each part, averaging about one item for each task level. Performance tests are not a part of the IML testing effort. Each March approximately 60,000 vocational students are tested in the State of Ohio with scoring and report services provided to schools by IML.

The tests are designed for use by teachers, supervisors, and administrators for evaluation and diagnosis of vocational achievement for the improvement of instruction. Although

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participation in the testing program is voluntary, almost all eligible secondary schools in Ohio are involved.

Within the State of Ohio, the cost of testing per student is \$1.50, and for schools outside of the State the cost is \$2.50 if testing is done in March (the time scheduled for testing in Ohio) and \$3.50 if done at some other time. No scoring services are provided outside of Ohio.

New York State Department of Education (NYSDE)

NYSDE is in the process of developing occupational competency tests that are given to students to assess their mastery of selected vocational coursework. At this point in the development process, these tests are primarily used for entry level courses, such as "Introduction to Occupations." Students must pass the tests as one of several requirements for high school graduation. New York% tests contain only multiple choice, primarily knowledge-based items, and do not measure students' abilities to perform job-related tasks. New York participates in virtually all of the testing consortia and makes these services available to schools and districts within the State who wish to test students in areas beyond those offered by the State competency tests. No studies of job-test validity have been conducted other than review of test items by those working in the field. At the present time, the tests developed by NYSDE are not available outside of New York.

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Vocational Technical Consortium of States (V-TECS)

V-TECS is a consortium of 25 State education agencies formed to promote the systematic development and implementation of competency-based vocational-technical education. Although most of the materials and test items are developed by State agencies, the process is guided by specifications provided by the V-TECS staff to help ensure quality control and consistency of products.

The V-TECS materials derive from thorough analyses of job tasks, skills, and knowledge. These analyses are conducted by actual observations of approximately 12 to 15 individuals as they perform a job. Based on these job analyses, task-skill lists are developed, and reviewed by 100 to 200 individuals who represent various aspects of the job or profession. The catalogs, which contain task descriptions for each job are then used by States or districts to develop test items, instructional materials, and curriculum guides.

The test items developed by the States are contributed to the V-TECS item banks from which States or schools can draw to comprise a test that matches the local curriculum. V-TECS does not currently provide intact tests or scoring services, but is considering moving to centralized test development, in part to ensure more quality control. V-TECS currently has catalogs (job descriptions) for 180 job titles, with one-third of those titles being updated at any one time. In addition, 12 to 15 test item banks have been completed and another 10 are nearing completion. Each item bank contains

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approximately 500 to 1,500 items for a job area, with 3 to 20 items for each skill. Many of these are tests of actual performance. Having this breadth in the number of test items offers some degree of test security and permits flexibility in generating multiple forms of a test. V-TECS is also in the process of identifying basic academic skills for infusion into their occupational materials, but have not yet addressed higher-order thinking or problem-solving skills.

The costs of participation in V-TECS is \$20,000 per State per year. As part of their agreement, each State agrees to produce one (small States) or two (larger States) V-TECS products.

Oklahoma State Department of Vocational and Technical Education

Oklahoma offers one of the most advanced competency-based curriculum and testing systems in the country. They have been leaders in a competency-based curriculum for over 25 years and in 1983, began a systematic and comprehensive effort in occupational testing. At the present time, they have completed development of test batteries for 168 occupations, each of which consists of three types of tests. The first is the traditional multiple choice (cognitive) test, the second is a scenario that is designed to assess students' decisionmaking skills within the occupation, and the third is a performance test. In addition, 600 to 1,000 multiple choice test items have been developed for each occupational test battery. This permits the composition of a variety of (continued)

randomly generated tests drawn from the larger battery of test items that measure a single domain.

All test items are keyed to duties and tasks that have been identified by committees of industry and educational representatives. Approximately four to six individuals representing each group sit on a committee. There is a great deal of concern with ensuring that the duties, tasks, and test items represent the most recent state of the industry.

Oklahoma does not require use of these tests, but makes them available to local programs for use in evaluating students' mastery of competencies and for identifying strengths and weaknesses in curriculum and instruction. At present, approximately 60 percent of the schools in Oklahoma have used the tests in some way. Apparently there is some concern on the part of teachers that they will be evaluated on the basis of their students' performance, although it is the teacher who requests the test from the State and who receives the test results.

The cost of the duty-task lists are \$2 to \$4 for in-state teachers and for out-of state, the cost is \$6 per occupation contained in a book, which may range from 3 to 14 occupations per book. The cost of a test for out-of-state purchasers is \$50 and contains 20 student packages, and includes all three types of tests mentioned above. Oklahoma does not provide scoring or reporting services for those

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outside of the State. Approximately 95 percent of the occupations taught in secondary vocational programs are **cove ed by** the Oklahoma system.

□