

Increasing Student Achievement

Educators' Guide to Secondary Career & Technical Education Assessment





▶ Our Mission

Building a Competitive Workforce through
Creative Learning Solutions

▶ Vision

To become the leading provider of
comprehensive educational solutions for
the emerging workforce

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Check Sheet for Success...

When selecting your Certification and Assessment Partner

Prepared by  2007

CRITERIA		YES	NO	NOTES
1	Is the organization that developed the assessment reputable and recognized within the CTE community?			
2	Does the organization have a set of professional competencies or credentialing standards on which the assessment is based?			
3	Are the standards (or competencies) available for public review?			
4	Is the assessment congruent with the set of standards?			
5	Does the set of standards reflect a thorough job and task analysis of the occupation and do the tasks appear to be properly weighted?			
6	Is this weighting congruent with the test emphasis?			
7	Is the test's reading level appropriate for the intended industry or job?			
8	Is the same (or similar) test used <u>in industry</u> ?			
9	Are results of national pilot tests or field tests available?			
10	Are the tests current and is there a schedule of test revision?			
TECHNICAL ANALYSIS				
11	Is there a technical manual for the test that can be reviewed?			
12	Is there a performance component to the test?			
13	Is there a criterion-referenced benchmark or norm based benchmark available?			
14	Is there validity information available on the test?			
15	Is there a reliability coefficient?			
16	Are the choices for each item plausible?			
17	Are the items independent of each other?			
18	Is there an item-to-total (point biserial) correlation?			
TEST ADMINISTRATION & SECURITY				
19	Does the test administrator maintain appropriate test security?			
20	Is there a time limit for the test?			
21	Are there appropriate accommodations for individuals with disabilities?			
22	Can the knowledge component be administered on-line and on paper?			
23	Is the performance component required to be completed in a specific time limit?			
24	Is the performance component evaluated by an independent content expert?			
25	Is pre-testing available?			
SCORING				
26	Is there a scoring rubric for each performance task?			
27	Is there a criterion-referenced benchmark for each performance task?			
28	Are students given feedback on their written and performance knowledge?			
29	Are students able to view scores in various tasks within the occupation?			
REPORTING				
30	Can the testing organization provide an annual report to a state showing a summary of students' performance disaggregated by specific subgroups?			
31	Does the test organization provide a detailed individual student report and a summary report to the school?			
32	If Pre-testing is selected as an option, are gain scores available?			
33	Can the testing organization provide customized score reports?			

Introduction

Welcome to the NOCTI's publication entitled *Increasing Student Achievement...Educators' Guide to Secondary Career & Technical Education Assessment*. This guide is designed to promote *assessment* literacy for Career and Technical Education (CTE) educators. The guide can also be used to better prepare CTE students for success in taking NOCTI assessments. This document was developed by NOCTI staff with the support of *assessment* practitioners throughout the nation. Experts in the field of CTE assessment were asked to provide input for the *Educators' Guide* to ensure that the information would be of value. NOCTI is grateful to CTE and assessment colleagues throughout the country for making this publication available and want to thank them for their assistance.

NOCTI has a long history of providing comprehensive occupational skill *assessments* to measure student achievement. Comprehensive CTE student *assessment* is one of the most effective tools for increasing student *achievement* and motivation. It is important for educators to consider the implementation of a comprehensive assessment program to improve student performance.

We hope that you will find the [Increasing Student Achievement...Educators' Guide to Secondary Career & Technical Education Assessment](#) interesting, informative, and motivating. We welcome your feedback and any suggestions you may have for future work in the area of assessment literacy.

Purpose

This guide attempts to address an aspect of secondary CTE that has received little attention; the assessment literacy of educators. School leaders need to go beyond ensuring routine compliance with external and internal regulatory forces to identify ways in which CTE program teachers might better understand *assessment* overall and use those practices to improve student *achievement*.

The guide addresses a number of practical assessment-related issues through a question and answer format. Questions include the importance of program *assessment*; the pressures perceived by staff; the balance between teaching, learning and *assessment*, and its implications for *accountability*; the *assessment* of students with special needs; computer-aided *assessment*; the assessment of *employability skills* needed in the workplace; and reporting and understanding the *results*.

This guide focuses on assessment literacy and good assessment practices rather than on an actual *assessment*. In addition, those with responsibilities for program *assessment*, both administrators and teachers, need to better understand assessment practices in order that they may better contribute to school improvement. A basic assessment glossary is included at the end of the Guide. Within the body of this document, you will notice words that are in *italics*. These words are directly related to assessment literacy and their definitions are included in the glossary.

► Assessment Basics

Obtaining sufficient assessment literacy allows teachers to integrate and apply knowledge and *skills* related to *curriculum* and educational practice, in turn enabling improved student performance. Increasing assessment literacy for teachers provides the following benefits.

Instructors:

- gain the capacity to examine student data and make sense from it.
- use *assessment* information to identify areas of program strength and weakness.
- suggest to the school's administration and advisory committee ways to bring about improvement.
- develop the ability to use the data to make effective changes in their program.
- work with their colleagues to engage in external assessment discussions, so they can learn and share best practices.

Having an effective school-wide assessment system provided by one vendor should be considered desirable. A typical school may have twenty or more occupational programs. Using assessments from different providers can become quite unmanageable. Using one vendor who provides a battery of occupational assessments minimizes assessment process details while at the same time maximizes the opportunity for instructors to work together. Using one vendor makes the process for each *assessment* essentially the same.

A Special Note: Developing a school *assessment* program is not easy. What works for one school may not work for another. It is highly recommended that school administration provide staff with routine professional development opportunities in assessment literacy. Therefore, it takes time and money to run an effective CTE assessment system.

► Assessment Purposes

Secondary CTE assessments are frequently used to sum up a student's *achievement*. In these cases, there is a *summative* purpose behind learner tasks. *Summative assessment* (post-testing) provides *achievement* or *competency* feedback in the form of information that can be used as performance indicators in appraising student learning, the comprehensiveness of the *curriculum*, and the work of teachers. A *summative assessment* should be valid, objective, and reliable.

Assessments are also used to identify what learners need to do in order to improve their performance. This second approach to *assessment*, which is intended to inform students about how to do better, is called *formative assessment* (pre-testing). Any task that creates feedback to students about their learning *achievements* can be called *formative assessment*. *Formative assessment*, with its emphasis on providing useful feedback, is beneficial. Students and teachers learn about student *achievement* before course completion, which allows teachers to adjust their *curriculum* for the benefit of students before they leave the program.

School officials need to determine the purpose of a CTE *assessment*. Are the assessments *summative* or *formative* or both? NOCTI assessments can be used for both purposes. For samples of NOCTI's various report options, refer to [Focusing on Assessment Results; Using NOCTI's Guide for Interpreting Score Reports](#).

► Norm and Criterion-Referenced Assessments

The question of what standards to use may be a consideration when determining whether the purposes of an *assessment* are *summative* or *formative*. What points of reference are to be used?

Norm-referenced assessments can be one solution. The idea is that assessments do not compare student *achievement* directly to *learning outcomes* but give data that allows students to be ranked, thus comparing one student to another. *Norm-referenced assessments* are comparative, telling professionals that one student is ranked higher than another, similar to a third and not as high as a fourth. It is normative in the sense that assessments reflect students' rank order of *achievement*. This desire to determine rank may be valuable, but objections can be made to norm referencing because the *assessment* can be insensitive to changes in student learning.

Criterion-referenced assessments are distinct from norm-referenced and are widely used in assessing competence. The theory behind *criterion-referenced assessment* is simple. Identify what are important characteristics of successful performance, specify them precisely, and judge evidence of *achievement* accordingly. In most assessment situations, levels of *achievement* are described, each with its own criterion or standard. When tasks are complex, it is likely that several criteria will be specified for each level. When complex performances are being assessed, as in CTE programs, then evaluators will be simultaneously judging multiple achievements against multiple criteria. In many cases, criterion -referencing is widely preferred to norm-referencing because teachers know exactly what they should teach. The critical competencies or tasks make it clear to students what they have to know and perform in order to achieve, and performance feedback identifies what students need to do in order to get better *results*.

NOCTI provides a variety of score reports that can be used for both norm and criterion-referencing. NOCTI has developed a Score Interpretation Report to assist you in interpreting your scores. This report can be found on the NOCTI website, www.nocti.org. Click on Publications, then Student Assessment. Each Score Report includes individual, group, site, state, and nation averages for the *test* taken. This type of score reporting, which compares student, site, state, and nation, is a good example of norm-referenced reporting.

A student or class score can be compared against a predetermined *cut score* to determine individual student or class performance. Experienced professionals who are recognized experts in determining employable *outcomes* determine cut scores. Scores reported below the *cut score* indicate levels of performance below a predetermined standard. Likewise, scores reported above the *cut score* indicate levels of performance above a predetermined standard. Using *cut score* comparison is an example of criterion-referencing. Subpart and test totals are reported for all NOCTI assessments. For an additional fee, custom reporting by NOCTI can be done as well.

► Validity and Reliability

A school district or teacher who takes on the task of using third party assessments should always be concerned about test *validity* and *reliability* of *results*. In general, teachers must be testing what they are teaching and teaching what they are testing. To do otherwise would not be an ethical teaching or testing practice. Through the *curriculum* alignment process, teachers should assure that their course competencies are identified in their course syllabus and that those critical competencies are taught, learned, and assessed in a variety of ways.

Curriculum development practices can be constructed or verified in two basic ways. Developing the *curriculum* first and then trying to find an *assessment* that matches the *curriculum* is one way of trying to align teaching and assessing practices. A better *curriculum* practice is to locate a valid and reliable *assessment*, which has been developed through the use of occupational and workplace *standards*, and align the curriculum to the *assessment*. This process allows the further identification and performance competencies embedded in each occupation that are needed to be successful of academic in the student's career of choice. A critic may contend that the teacher or school is teaching to the *test*, but in today's high stakes environment, it is highly critical that student performance is maximized and proved, and at the same time allowing for individual program differences, established by the school community, that motivate students and staff to do their best.

NOCTI assures the *validity* and *reliability* of their assessments in multiple ways. To be valid, an assessment needs to assure that test content is measuring what is intended to be measured. NOCTI assessments are developed through the identification of critical competencies from occupational and workplace *standards*. Academic *standards*, which are embedded in all occupations as being critical to the understanding and the performance within each occupation, are also identified. A team of experts in the field verifies these *standards*. These experts come from business, industry, and education. For an *assessment* to be reliable, it must be consistent and dependable over time. NOCTI assures this process by piloting all of its assessments with schools and institutions from all over the nation. In addition, the assessments are tested for such items as readability, *fairness*, and objectivity. Through this process, sampling error is minimized between a student's score and the *population* of all scores within that *assessment*.

► Staff Development

School leaders should ensure that all staff involved in the assessment of students is competent to undertake their roles and responsibilities. Schools are obligated to consider how staff development can promote the teacher's expertise regarding *assessment*, and how administrators can be supportive in their roles. A school's administration must ensure that its staff has the necessary knowledge and *skills* to undertake their role. The process of program validation and *accountability* is a good vehicle for inducting new teachers into what will be expected of them, and for refreshing the curricular expertise of the more experienced teachers as new demands are made of secondary career and technical education. NOCTI provides many assessment tools for staff development that school districts can use. NOCTI is available for consultation free of charge to assist each school district in the implementation of an assessment program. For a nominal fee, NOCTI will send a representative to your school to do an assessment professional development day.

Many people with an educational background have some knowledge of assessment and have minimally picked up approaches to it through college tests and measurement courses. Many educators can claim to know a little about *assessment*, as much as any member of the public can claim to know a little about public education. Few teachers, though, have a firm grounding in the theory and methodology of assessment. School administrators would appear to be the prime conduit for providing the necessary leadership and management of *assessment* practice for their staff.

In general, school administration should:

- make *assessment* a priority rather than a mandate
- provide information sufficient for a general level of understanding in the school system regarding *assessment*
- develop technical expertise in *assessment*
- settle on a competent *assessment* provider
- share existing *assessment* best practices

► Using Assessment Practices to Motivate Staff and Students

Students enroll in CTE programs for a variety of reasons. They obtain program enrollment information from siblings, friends, school counselors, and reputations of program instructors. Many students enroll because they have a sincere interest in the career. Career pathways, which are broader programs than occupation-specific ones, and the use of educational development plans (EDPs) have become popular methods to ensure that students have the proper aptitude and interest for their career of choice.

Knowing that more students tend to be enrolled in *CTE* programs because they want to be in the program, teachers need to re-think the relationship of *assessment* and student motivation. Because students have a desire to take advantage of their interest in their career choice, they will be eager to show the instructor and others what they have learned in the *CTE* program. Educators need to take advantage of using program *assessment* in order to promote student success. Most students succeed educationally only if they want to succeed and generally when they feel capable of doing so. *Assessments* can be used as a powerful tool in helping students succeed.

Fear of failure is too often considered an approach for motivating students to do well in the classroom. Many educators are reconsidering this approach to student learning. Techniques of motivating teachers and students through *assessment* are becoming recognized as effective tools for showing student success and program improvement through this continuous improvement model. It can be a "win-win" approach to life-long education.

► Typical Questions

1. What are the purposes and benefits of using CTE occupational program assessments?

There are many purposes and benefits of using CTE occupational program assessments. Primarily, they are used for:

- *enhancing student competency and assuring accountability to various publics*
- *improving the efficiency of curriculum delivery*
- *motivating students and staff to do their best*
- *assessing the taught curriculum, thus enabling instructors to adjust and strengthen their program as needed*
- *providing feedback to students about what they have learned*
- *establishing accreditation goals, such as North Central Accreditation, Baldrige Certification, ISO*
- *engaging advisory committees and other adult professionals in the program*
- *providing a method of certifying student completers (Tech Prep, 2 +2 transition to post secondary institutions, AP)*
- *giving occupational programs credibility with parents and the business community*
- *marketing the program to various publics*
- *enhancing student placement opportunities in the workplace*
- *improving the image of career and technical education for everyone*
- *Meeting the new Perkins legislation requirements*

2. How does the CTE educator ensure that program assessment is a correct tool to use in assessing student learning?

It is important that the program instructor knows how to construct, review, and analyze various aspects of their instructional program. Essentially this is the alignment of comprehensive classroom/lab instruction to district benchmarks, state education standards, national skill standards (critical occupational competencies), and the actual program assessment that is used. The instructor must understand the importance of alignment concerning these various elements and examine whether his/her program is aligned considering these principles. Essentially, are you teaching what you plan to test and are you testing what you plan to teach? Internal and external resources are available to assist the instructor with this process. The web site sponsored by the National Association of State Directors of Career Technical Education Consortium, careerclusters.org, is a good place to start.

3. How do instructors discover which assessment aligns with their curriculum?

Each of NOCTI's standardized assessments has a critical core competency list, which served as the basis of the test's development. Critical core competency lists are provided with Assessment Blueprints, which are available online at www.nocti.org.

4. Why should the instructor find the time to include program assessments into their busy schedule?

Assessing student knowledge is an essential part of the teaching and learning process. Assessing student occupational competencies through program assessment starts on the first day of school. The instructor cannot wait until the end of the year before they tell their students when and how they will be assessed. Because national assessments are written by professionals in the field, it is important to tell the students right from the beginning they will be tested on what they have learned in the program. This might seem frightening to both the student and teacher, but the instructor must assure the student that by the time the assessment is completed, the student will be proud of what they have learned and will gain added confidence as they apply their skills to future career opportunities. The instructor will be surprised and gain confidence as well. For instructors, the results answer that age old question that students have, "Why do I have to learn this?" Instructors can state to students that they will be tested on overall program core competencies, and that the results will benefit their employability. Instructors need to be creative in using a variety of techniques to motivate students throughout the school year. Instructors will be amazed at the effectiveness of using motivational techniques derived through assessment practices to improve student performance over the course of their program.

5. What if instructors have limited knowledge about the assessment process?

It is not surprising that teachers do not know a lot about the intricacies of program assessment. Other than a college course or courses in tests and measurements, teachers learn the basic understanding of assessment and assessment processes over time. Teachers should keep in mind that assessment is all about being accountable to the students they teach. It is important that students can make the grade in regard to employment and post secondary opportunities after completing their CTE program. One way of identifying competency is to have students complete a comprehensive third party program assessment.

Teachers will have to take the time to strengthen their knowledge of assessment and assessment processes. For example, teachers will have to gain the capacity to study student data, understand the data, and use assessment information to identify areas of program strength and weakness in order to make program improvements. This takes time, practice, and patience. Having a school administrator who is knowledgeable about assessment and a test proctor to assist in the details are valuable commodities for schools that exhibit effective practices.

6. Who pays for the assessments and how much do they cost?

Generally, schools make comprehensive program assessment a priority and provide a school-wide budget for an assessment program. Current pricing for all assessments can be found on the NOCTI website, www.nocti.org, in the Forms section on the Job Ready/Student Order Form or in the Announcements section of the NOCTI homepage..

7. How many questions are on the assessments, how long do they take to complete, and how are they scored?

Most written assessments have between 150 and 200 multiple-choice questions. Students are allowed three hours to complete the written assessment. Most students finish before the allotted time. Most written assessments can be completed online. Written assessments can still be taken in the traditional paper and pencil form and sent to NOCTI for scoring.

The performance assessment generally has three to seven simulated jobs that need to be performed. Typically, advisory committee members or other competent professionals evaluate the assessment. If the paper/pencil method of testing is chosen, these evaluations are sent to NOCTI where they are further processed, taking into consideration both the process and product-scoring techniques through the use of a scoring rubric provided by NOCTI. If the performance assessment is administered in conjunction with an online written assessment, the ratings from the scoring rubric are entered online and are directly delivered to NOCTI through the Client Service Center on the NOCTI website.

8. Can a national assessment take into consideration regional and local differences?

Generally no, because NOCTI assessments are created from national occupational standards. Core critical competencies from these standards are derived from a nation-wide team of industry and educational professionals. Educators should keep in mind that these critical competencies represent an occupational standard. Students exhibiting proficiency with these competencies indicate that they have a “core” understanding of that particular occupation regardless of geographic region. The NOCTI assessments are designed to address core competencies in an occupational area and can be supplemented with locally developed tests that would assess local and regional course content.

9. Are NOCTI pre or practice assessments available?

Job Ready pre-assessments from NOCTI are available. Typically, schools that use the pre-assessments use them in the following ways:

- a. An initial test at the beginning of a student’s program to determine pre-knowledge of subject matter before a course is taken.*
- b. A test after the first year of a two-year program. As the student approaches program completion, a post-assessment is given. NOCTI reports both the pre and post-assessment scores with the percentage gain (or loss) between assessments.*

► Typical Questions (continued)

Formal practice assessments are **not** available. NOCTI does provide sample questions for each standardized test on the Assessment Blueprint found online. With the Assessment Blueprint, NOCTI also provides a list of critical core competencies, as well as other information pertinent to each assessment (i.e., number of questions on a written test, number of jobs for performance test, administration time, and sample questions). Assessment Blueprints for all of NOCTI Job Ready Student Assessments may be downloaded from the web site at www.nocti.org.

10. Does NOCTI have study guides available for the assessments?

NOCTI does have Study Guides available for several of their assessments. These study guides include a teacher companion guide for teachers to get the most from the study guide. Each study guide also comes with a user code and password to access 30 sample question online using NOCTI's online testing system. More information about study guides as well as available titles can be found in the Creative Learning Solutions section of the NOCTI website.

10. Are NOCTI assessments written or performance or both?

NOCTI offers both written (multiple-choice questions) and performance components for nearly all of their assessments. To get the most comprehensive assessment outcome of student competency, both assessments should be considered. Ideally, students taking assessments should demonstrate both the knowledge and hands-on practices needed to be competent for entry-level work. All of NOCTI's job ready written assessments are now offered online. The speed with which computerized assessments can generate results benefits both the student and the teacher. NOCTI's vast item bank allows test questions to be scrambled in order to prevent student dishonesty.

11. How is the NOCTI Job Ready Student Assessment administered?

NOCTI requires that the school establish a test site coordinator. Typically, this site coordinator is a school administrator who is responsible for program assessment. Test site coordinators order assessments, coordinate assessment schedules, work hand in hand with the assessment provider, and provide security for test booklets and score sheets. NOCTI provides complete test administration instructions and services.

12. What is the role of the CTE advisory committee in the assessment process?

CTE advisory committee members are traditionally used as experts in evaluating the NOCTI Job Ready Student Performance Assessment. In most states technical advisory committee members are mandatory advisors of secondary CTE programs. Advisory members perform a number of functions in an advice-giving capacity to the school district. Some of those functions include recommending equipment, tool purchases, curriculum content, and evaluating student end-of-program competence. Successful and effective CTE programs in most instances have a very active advisory committee. A tradesperson, business representative, and/or post secondary educator with at least three years technical expertise in the occupation typically administers and evaluates the performance test. NOCTI provides scoring rubrics for evaluators to judge student performance.

13. Who may serve as a test proctor/evaluator?

The school's test site coordinator, who oversees written and online assessments, assigns a test proctor. An assessment proctor is a school employee who supervises an examination or assessment. The proctor should not be the teacher of the course that is being assessed. School staff may assist the test proctor with students completing the assessment. Performance test evaluators come from business or industry or from a college or university.

14. Would a general employability skills or workplace readiness assessment be just as useful as a specific occupational assessment?

Both business and government see the issue of "employability" as a desirable outcome of secondary career and technical education. The idea being conveyed today by some employers is that getting any job is almost as desirable as getting a job for which the student has been trained. A thorough assessment provider generally offers both occupational specific and workplace readiness assessments. NOCTI offers both types of assessments.

15. Are accommodations available for special needs students during assessment?

The Individuals with Disabilities Education Act (IDEA) gives force to expectations that students with disabilities must be given equal opportunity and access to CTE programs and therefore should not be treated less favorably than those who do not have disabilities. Institutions are required to ensure that reasonable adjustments, modifications, and accommodations are made to assessment practices such that students with disabilities have an equivalent opportunity to demonstrate their attainment of learning outcomes in accordance with the student's Individual Education Plan (IEP). One such accommodation may entail a separate setting and extended test time for the special needs student. NOCTI offers all Job Ready assessments in large print as well as Text to Speech (TTS) versions. If a student has been identified with severe disabilities, an alternative assessment may have to be used because of the adaptations to the curriculum. In regard to complying with IDEA, state and local guidelines may prevail. While the policy is easy to state, its implementation demands some thought and planning. From the school administrators' and teachers' point of view, there are a number of matters to be considered, which relate in general to the recognition of students with disabilities.

The development of a welcoming and supportive attitude in the school for persons with disabilities is a first good step. This includes raising the general level of awareness of the nature of disabilities and of the ways in which students can best be supported. Professional development programs used in the school to assist in this process may need to be updated.

Considerations to keep in mind are: seeing that assessment expectations are appraised from the point of view of best educational practices, and that curricula are adjusted as appropriate, rather than simply expecting the assessment vendor's requirements be changed in order to accommodate students with disabilities. To assist the school, NOCTI can report its findings by disaggregating the data, thus accounting for students with disabilities.

16. Is there an assessment guide available for CTE educators to use in preparation for doing the actual assessment?

Yes. NOCTI provides a copy of an assessment handbook titled, "Guidelines for Organizing an Assessment Program." A secondary CTE educator with nearly 20 years of assessment experience both as a teacher and administrator wrote the handbook. The handbook can be downloaded from NOCTI's web site at www.nocti.org.

17. How does the instructor use assessment results?

The instructor receives a score report for each test taker. NOCTI also has a Score Interpretation Guide available on the website to assist educators in interpreting scores. Each score report includes individual, group, site, state, and national averages for the test taken. Subpart and test totals are reported for all tests. National measures of variation (i.e., standard deviation, etc.) are also included in the score reports.

Students who have taken a NOCTI assessment receive a certificate of completion from NOCTI if it is requested on the order form by the site coordinator. Some states/sites issue certificates of completion or achievement based on the individual's score. NOCTI assessments, through articulation agreements, can be used as the basis for advanced placement of secondary students in post secondary institutions.

18. Do NOCTI occupational assessments allow for the assessment of core academic skills?

Yes. NOCTI assessments focus on student outcomes from CTE programs. Those outcomes include core academic skills embedded in the curriculum, which are required to complete occupational tasks. The changing nature of work requires higher literacy, numeracy, and scientific skills combined with technical skills for students to succeed in the workplace and in post secondary education. NOCTI assessments are cross-correlated to academic standards to document and contribute to secondary/post secondary achievement.

19. How can assessment results be used for curriculum improvement?

The purpose of the NOCTI Job Ready Student Assessment is to measure the effectiveness of the program's curriculum. The CTE curriculum cycle can be better understood by relating course evaluation to a three-legged stool. The curriculum is the WHAT, the instruction is the HOW, and the assessment is the HOW WELL students did.

► Typical Questions (continued)

20. How are NOCTI assessments developed and/or revised?

New and emerging occupations and requests from clients require NOCTI to be continuously involved in test development and revision. When determining a new NOCTI test title, NOCTI consults the Classification of Instructional Program (CIP Codes), published by the United States Department of Education, and the Dictionary of Occupational Titles (DOT). Once established, NOCTI then validates the test title with the test development committee comprised of subject matter experts that has been established to develop the test. Development committees consist of representatives from industry and both secondary and post secondary education. Geographical representation is also taken into consideration.

Prior to taking part in a national development committee, NOCTI staff provides each committee member with all appropriate test-related materials including a critical competency/task list. In addition, all appropriate related supportive curriculum materials as well as item writing guidelines are provided to each committee member. The committee members are instructed to review all materials prior to the meeting in order to facilitate the process. Assessments are developed in accordance with committee-established specifications and recommendations. Written assessments consist of a multiple-choice format with four options per item, one of which is the correct answer. The performance assessments consist of a series of tasks that make up a job. The committee develops specific criteria for a scoring rubric to be located in the evaluator's guide to rate individual performance. Once a draft assessment is completed, the following additional steps are followed:

- Bias Review
- Readability Analysis
- Draft Review by Committee and Revisions
- Item Analysis
- Pilot Testing
- Establishment of Norms
- Test Revision

Test revision generally is not as extensive, since much of the preliminary work has been completed. NOCTI follows the necessary steps from the above procedures in updating all assessments. Job Ready assessments are updated on a two year cycle.

21. Can educators or business and industry representatives contact NOCTI if they have a “technical accuracy” question about the assessment or the assessment process?

Yes. NOCTI provides an Irregularity Report as part of the information that is sent to testing sites when assessments are given. This Irregularity Report provides educators, or business and industry representatives who assist the learner or evaluate the learner's assessment, the opportunity to give feedback to NOCTI if they have a question or a concern.

22. Are there CTE curriculum and assessment resources available for educators to use?

Yes. The following are some examples of web sites which offer a comprehensive list of curriculum and assessment resources: Illinois Office of Educational Services (<http://www.ioes.org>) National Career Clusters (<http://careerclusters.org>) National Occupational Competency Testing Institute (<http://nocti.org>) National Skill Standards Board (<http://www.nssb.org>) Virginia CTE Resource Center (<http://www.cteresource.org/tasklists/>) Utah Skill Certificate Program (<http://usoe.k12.ut.us/ate/Skills/skills.htm>) Sites Offering Academic and Skill Standards (<http://www.ed.gov/G2K/standard.html>) The web site: <http://www.ecs.org/html/educationIssues/Research/primer/forward.asp> is an advanced resource from the The Education Commission of the States (ECS) and Mid-continent Research for Education and Learning (McREL) to help policymakers and education leaders better understand and evaluate education research.

23. Are NOCTI assessments used for evaluating teacher effectiveness?

Assessing student performance using NOCTI assessments and using only those results alone to determine teacher effectiveness is highly discouraged. Research does not support the rating of teacher effectiveness based on one evaluative measure. Any evaluation tool for assessing teacher effectiveness must take into consideration a variety of measures of student performance and program accomplishments including such indicators as student enrollment in college; job and military placement; advisory committee input; and student/employer satisfaction surveys.

24. How does a school district get started?

The school district should look at the assessment process as an opportunity to improve student achievement. Everyone in the school community has a vested interest in improving student performance. Boards of education may approve board policy as recommended by their superintendent or CEO, which outlines the importance of using verifiable assessments in the overall scope of program improvement. School guidelines are typically written and outline both the assessment process for the school's administration and also how the assessments are going to be used. Teachers are an important part of the overall process. Any initiative undertaken by a board of education or administration that forces the teaching staff into an assessment process without their input is not a recommended action. At the same time, teaching staffs should be receptive to ways that motivate their students for ultimate performance. Teachers can use the results from assessments as a critical factor for initiating program improvements to their curriculum. The process that works best is when the school and business community work together in harmony in establishing assessment practices that work best for their students.

A customer service representative at NOCTI is available via email or telephone. Customer service representatives will further explain the process of becoming a NOCTI client and provide you with the appropriate guidance to get you started. The NOCTI staff assures their clients that they strive to be the school's assessment partner through all phases of the assessment process.

25. Is there training available for new site coordinators to get acclimated with NOCTI procedures?

Yes, NOCTI provides site coordinator training via a web teleconference several times throughout the school year. A schedule of site coordinator training dates can be accessed in the Client Services Center on the NOCTI website.

► Summary

Improving assessment literacy is a lofty goal that is not easily accomplished. When it comes to learning about assessment, testing, and competency, keeping current with research in teaching and learning is crucial. New developments are occurring on a regular basis. One key point to remember is that third party assessment of students can be an effective way to improve student learning, thereby enhancing school improvement. Once schools get started, administrators and staff will wonder why they did not start an assessment program earlier. An effective assessment program can positively affect the overall school culture. Effective assessment practices can motivate staff and students.

At a minimum, comprehensive CTE assessment practices, using standards that are business and industry recognized, should be a topic that is thoroughly considered by the school community to determine its scope, function, and cost. NOCTI staff is available to assist school districts and states through this process.

NOCTI contact information is available at <http://www.nocti.org>.

► Assessment Glossary

This glossary provides definitions of terms as used in this text. For many of the terms, multiple definitions can be found in the literature; also, technical usage may differ from common usage.

Accountability - Reporting of student, program, or institutional data for the process of program improvement.

Affective - A person's disposition or attitudes or behaviors.

Angoff Method - Established in 1971 the Angoff educational measurement method charges judges to assign probability to each test item directly, thus circumventing the analysis of a grid or the analysis of response alternatives. Each judge is asked to state the probability that the "minimally acceptable person" would answer each item correctly. The sum of these probabilities, or proportions, would represent the minimally acceptable score.

Assessment Blueprint – Several sample questions form the written test and a sample job from the performance test. The Assessment Blueprints on the NOCTI web site provide summarized breakdowns of the contents covered by NOCTI's occupational assessments/tests. The Assessment Blueprints supply a list of the competencies for each test with a summary of the skill areas covered, several sample questions from the written test, a sample job from the performance test and a percentage breakdown of the test contents.

► Assessment Glossary (Continued)

Assessment (Formative) - Purposeful, ongoing collection of information regarding how students are learning while there is still the opportunity to make improvements. Both teachers and students then use the information to guide continuous improvement toward the intended learning.

Assessment Methods - The different ways used in schools to evaluate learning. There are four basic categories of assessment methods: written forced response, essay, performance assessment and portfolio.

Assessment (Summative) - An assessment measure of achievement at the end of an instructional unit, course of study, or program.

Authentic (Performance) Assessment - Assessment technique involving the gathering of data through systematic observation of a behavior, process or product and the evaluation of those based on a clearly articulated set of performance criteria, which serves as the basis for evaluative judgments.

Baldrige – The Baldrige Award is given by the President of the United States to businesses - manufacturing and service, small and large - and to education, health care and nonprofit organizations that apply and are judged to be outstanding in seven areas: leadership; strategic planning; customer and market focus; measurement, analysis, and knowledge management; human resources focus; process management; and results.

Battery - A set of tests usually administered as a unit. The scores on the different tests in the set usually are scaled so they can readily be compared or used in combination for decision making.

Career Clusters – The sixteen Career Clusters provide student with relevant contexts for learning. Career Clusters link what students learn in school with the knowledge and skills they need for success in college and careers.

Career Pathways – Broad groupings of careers that share similar characteristics and whose employment requirements call for many common interests, strengths and competencies.

Certification - Verification that a level of achievement has met designated standards.

Coefficient Alpha - An internal consistency reliability coefficient based on the number of parts into which the test is portioned (e.g., items, subtest, or raters), the interrelationships of the parts and the total test score variance. Also called *Cronbach's alpha* and, for dichotomous items, *KR 20*.

Cognitive Assessment - The process of systematically gathering test scores and related data in order to make judgments about an individual's ability to perform various mental activities involved in the processing, acquisition, retention, conceptualization, and organization of sensory, perceptual, verbal, spatial, and psychomotor information.

Competency - Demonstration of the ability to perform a specific task or achieve specified criteria.

Competency Listing - (*Also critical competencies, core competencies, standards, duties and tasks*) Terms used interchangeably throughout the NOCTI web site, referring to the broad categories and particular skills covered on a particular assessment.

Computer-based Testing - (*Also online testing*) An assessment administered using a computer online system instead of hard copy/pencil and paper administration.

Content Validity - A test has content validity if the item contents are indicators of the characteristic it is designed to measure.

Continuous Quality Improvement - CQI is a methodology intent on meeting or exceeding customer requirements by continuous improvement and innovation in products, processes and services.

Course - A complete body of prescribed studies constituting a curriculum.

Credentialing - Method of assuring students, parents/guardians, and the community that students are prepared with the knowledge and skills to be successful as they move from school to school and to their chosen career.

Criterion-Referenced Assessment - An assessment that measures student progress toward specific curriculum goals or standards. Scores are reported as comparisons to predefined acceptable levels of performance rather than through comparisons to other students.

Curriculum - A collection of statements of the objectives, or learning goals, to be taught in each subject at an individual grade level. Curriculum guides what is taught in the classroom.

Cut Score - An established score which an individual needs to achieve on an assessment to demonstrate minimal competency.

DACUM - An acronym for **D**eveloping **A** Curriculum is a Canadian term. It is an approach to job, occupational, process, and functional analysis that involves bringing a committee of expert workers together under the leadership of a trained facilitator. Modified brainstorming techniques are used to specify in detail the duties and tasks those successful workers in their occupation must perform. The general knowledge and skills needed, important worker behaviors, tools and equipment, the future trends and concerns are also identified. The purpose of this comprehensive job and task analysis is to establish content for both curriculum and the assessment instruments designed to measure competency.

Demographics - Characteristics of human populations.

Distracter - An incorrect answer presented as one of the response alternatives in a multiple-choice test.

Duty - This is an arbitrary division of a job (or occupational area) consisting of related tasks that are grouped for descriptive purposes. Duties are usually stated as general areas of responsibility, with action words ending in *ing*.

Ebel Method - The Ebel educational measurement method was developed in 1979. Judges rate test items along two dimensions, relevance and difficulty, using four levels of relevance (essential, important, acceptable, and questionable) and three levels of difficulty (easy, medium, and hard). Next, the judges are asked to do two things: locate each of the test items in the proper cell, based upon their relevance and difficulty, and assign a percentage to each cell. The percentage is based on the percentage of items in the cell that a minimally qualified examinee should be able to answer. Then the number of test items in each cell is multiplied by the appropriate percentage (agreed upon by the judges), and the sum of all the cells, when divided by the total number of test items, yields the standard or estimated test score for the overall test.

Employability (Workplace Readiness) - A person's ability to be successful in the workplace based on factors such as labor market, occupational information, values clarification and personal understanding, career planning and decision making, and job search techniques, including daily living skills, personal skills, work ethic and initiative, reliability and accepting responsibilities involved in maintaining a job.

Evaluation - The process of collecting information from multiple sources to make judgments (assign a grade, for example) about how well students have learned.

Evaluator - An individual who administers and evaluates practical skills on performance-based assessments.

Evaluator Guide - A reference and instructional booklet for evaluators, designed to complement performance-based assessments.

Evaluation Feedback - Responses or information that tells learners how their assessment scores compare to others or that provides a judgment summarizing the quality of the learning they have accomplished. Letter grades, numbers, symbols, and written phrases are typically used to deliver this type of feedback.

Experienced Worker Assessment - Assessments for individuals with advanced skills and/or more than three to five years of experience in the occupational field being assessed.

Fairness (in testing practice) - This concept, encompasses all testing design and practice, and points toward the necessity of ensuring that measures and consequences from measures are equitable across all subgroups of examinees.

Feedback - The return of information about the result of a process or activity. Feedback is an evaluative response.

Formative (Evaluation) - An assessment that is used for making improvements (individual or program level) rather than for making final decisions or for accountability purposes.

Goals - Statements describing general expectations regarding student intended outcomes.

High Stakes Assessment - Use of the results of an assessment to determine attainment of a goal such as completing a program of study, receiving certification, or moving to the next level.

Item - (*Also question*) A term used to refer to a question on a written assessment or a job and task in a performance assessment.

Item Bank and/or Pool - The aggregate of items from which a particular test or scale is selected for a test taker during adaptive testing.

ISO - International Standardization Organization is an international body of technical standards for various industries. These guidelines provide long-term economic benefit for businesses that choose to implement them.

► Assessment Glossary (Continued)

Jaeger Method - In 1978, Jaeger offered a method for standard setting on the North Carolina High School Competency Test. His method uses judges from a variety of backgrounds and employs normative data. Rather than ask judges to relate to the term “minimal competence,” the judges are asked to respond to the questions, such as, “Should every high school graduate be able to answer the item correctly?” “__Yes, __, NO.” After a series of processes involving judges from various areas of expertise, and after the presentation of some normative data, standards determined by all groups of judges of the same type are pooled, a median is computed for each type of judge. The minimum median across all groups is selected as the standard. Jaeger’s method has considerable merit for setting standards on very important tests.

Likert Scale - The scale used in items that allow respondents to indicate their level of agreement with a statement by marking their response over a five point scale, usually ranging from strongly agree to strongly disagree.

Longitudinal Data - Data collected on the same individual over time for use in a long-term study.

Mean - The average of all the elements (individual’s test answers) in a sample. To compute a sample mean, add up all the sample values and divide by the size of the sample.

Median - The value on a measure or test for which roughly half the data in a sample are smaller and roughly half of the data are larger.

Meta-analysis - Statistical method for analyzing research data in which the results from several independent, comparable studies are combined to determine the size of an overall effect or the degree of relationship between two variables.

Mode - The most frequent occurring value in a set of data based on a particular measure or test.

Module - A type of learning package that usually includes a performance objective, enabling objectives, essential attitudinal and cognitive information as planning or practice activities, and feedback activities. While modules are developed in a wide variety of formats, most are self-contained, transportable, and designed for either individual or group use.

Multiple Measures - A number of pieces of assessment data gathered from a variety of sources/tests.

NASDCTEc – National Association of State Directors for Career and Technical Education Consortium

NCS OP Scan6 - Test scoring technology utilized by NOCTI and *The Whitener Group* since 2004. (for paper/pencil testing only)

Nedelsky Method - In 1954 the Nedelsky’s educational measurement method was developed. Under the method, judges are asked to identify distracters in multiple-choice test items that they feel minimally competent students should be able to eliminate as incorrect. The minimum passing level for the item then becomes the reciprocal of the remaining alternatives. The judges proceed with each test item and, upon completion of the judging process, each judge sums the minimum passing levels across all test items to obtain a standard. Individual judges’ standards are then averaged to obtain a standard for the test.

Norm-Referenced Assessment - An interpretation of scores on a test that focuses on the rank ordering of students, not their performance in relation to specific criteria.

Objective Measures - Tests or measures that can be scored without reliance upon subjective judgments (e.g., tests comprised of multiple-choice items).

Objectives – Statements of the specific knowledge, skills, or attitudes that students are expected to achieve through their educational experience.

Occupational Skills Attainment - Proficiency to perform actual tasks and technical functions required by certain occupational fields at entry, intermediate or advanced levels.

Online Testing - (NOCTI’s online testing) A program that offers selected assessments delivered and scored through an internet-based computer system.

Percentile Rank - The score used most frequently to report individual student results on norm-referenced tests. A score at the 63rd percentile means that the student scored as high or better than 63 percent of the students who originally took the test.

Performance Assessment - Assessment based on students’ performance of selected jobs developed by subject matter experts in the particular field of study being tested.

Perkin’s Legislation – Federal legislation for Career and Technical Education.

Pilot Study/Assessment – Often refers to a small, scaled down assessment designed to test the validity of measures and manipulations of a planned full-scale study. A pilot can also refer to the initial administration of new assessment items/procedures with the intent of evaluating and revising the items/procedures for future use.

Pilot Testing - The initial administration of a new or revised assessment, with the intent of evaluating and/or adjusting the assessment prior to national, full-scale administration.

Population - All possible individuals making up a group interested in a study or assessment.

Post-Test (Program) - An assessment measurement administered after program completion, usually for the purpose of comparing the score to an earlier pre-test measure on the same or similar content.

Pre-Test (Program) - An assessment measurement administered prior to course initiation, usually for the purpose of comparing to a post-test measurement of the same or similar content.

Proctor - Individual who is knowledgeable regarding administration of objective-type tests and is very detail oriented. Capable of monitoring groups of people and providing succinct instructions. Also assists with training and oversight of Evaluators for the NOCTI performance test.

Proficiency - Achieving competency on predetermined standard.

Program Improvement - A judgment by experts of the worth of the curriculum, based primarily on observations to a comparison between student performance indicators and objectives and actual student performance on either standardized or evaluator-constructed measures.

Psychomotor - Relating to movement or muscular activity associated with mental processes.

Quality - The degree to which an educational institution and/or its programs and services are fitted to its purpose, satisfactory to its clients, and of a quality grade equivalent to other similar institutions.

Random Sample - An arbitrary subgroup of persons/items/observations drawn from and meant to represent a larger population.

Range - The distance between the highest and lowest score on a given measure/test.

Rater - A person who evaluates or judges student performance on an assessment against specific criteria.

Rating Scale - A series of items or statements that describe the degree or extent of an aspect of a skill or a personal trait.

Raw Score - The measure prior to scaling.

Reliability - The degree to which a test consistently measures what it is intended to measure.

Research – An approach/method for acquiring knowledge and identifying the causes for behavior.

Results or Findings - The outcomes of the assessment study or the experiment.

Rubric - A set of scoring guidelines that can be used by a rater to evaluate student's work.

Sample - A selected subgroup of entities called sampling units (test takers, items, etc.) from a larger specified set of such entities, called the population.

Sampling Error - The deviation between characteristics of a sample and the related characteristics of a population.

Scoring Rubric - The established criteria, including rules, principles, and illustrations, used in scoring individual items and clusters of items. The term usually refers to the scoring procedures for assessment tasks that do not provide enumerated responses from which test takers make a choice. Scoring rubrics vary in the degree of judgment entailed, in the number of distinct score levels defined, in the latitude given scorers for assigning intermediate or fractional score values, and in other ways.

Significance - The likelihood that relationships observed in a sample or between samples can not be attributed to sampling error alone.

Site Coordinator – An individual charged with the oversight of the NOCTI testing program at a specific institution. This individual will need to remain informed o NOCTI testing services, policies, and procedures.

Skills - Observable behaviors that demonstrate levels of competence (i.e., knowledge, comprehension, application, analysis, synthesis, and evaluation).

Standard Deviation - The square root of the variance, used as a measure of dispersion or spread of a group of scores.

Standard Error of the Measurement - The standard error is the standard deviation of the sampling distribution of a statistic.

Stem - The part of an objective test question or item that poses the question to be answered or the problem to be solved.

► Assessment Glossary (Continued)

Student Outcome - The achieved results or the actual consequences of what a student has demonstrated or accomplished; including academic and occupational, as well as the intellectual, personal, civic development, attitudes, values, and beliefs that students attain as a result of their educational experience.

Study Guide – Designed to be used prior to the administration of a NOCTI post-assessment; provides students and teachers with insight into the NOCTI assessment as well as a user code and password for 30 online sample questions.

Subjective Measures - Tests or measures that are scored or rated with some degree of subjective judgment (e.g., performance).

Task - A meaningful unit of work activity generally performed on the job by one worker within a limited period of time. A task must be logical and necessary to achieving a single objective or output.

Team based - Cooperative effort and/or decision made jointly by the members of a specific group.

Technical Manual - a publication by test authors and publishers that provides technical and psychometric information on a test.

Test - Measurement instrument, procedure or device that requires scored responses from examinees; may include both selective and constructed response formats.

Text-to-Speech – Available for all NOCTI Job Ready assessments, a computer program that reads the assessment to a student who has difficulty in the area of reading. This should be used to accommodate any Individualized Education Plan (IEP) guidelines.

Total Quality Management (TQM) - TQM is a management system taken from business, and now being applied to education. TQM applies concepts of control, quality, process, and customer services to management. The quality movement brings with it a sense of collective responsibility for learning, a habit of listening to the people we serve, reliance upon data, an ethic of continuous improvement, a determination to develop fully the talent of every learner, and an acknowledgement that we are professionally accountable to one another and to those we serve.

Validity - The degree to which a test or assessment measures what it is designed to measure.

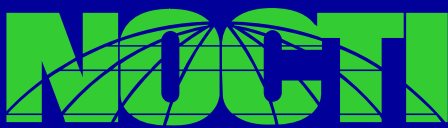
Variable - Any quantity that can assume more than one state or numerical value.

Weighted Scoring - A method of scoring a test in which the number of points awarded for a correct (or diagnostically relevant) response is not the same for all items in the test. In some cases, the scoring formula awards more points for one response to any item than for another.

Web Conference - A form of communication, often used in test development and/or revision, involving visual participation through use of the Internet as well as audio participation through a conference call.

Work Based Learning - Supervised student learning that takes place at a work site through unpaid or paid activities.

Workplace Readiness Skills - A set of personal attributes required for success at work, including the ability to identify established rules, regulations, and policies; practice cost effectiveness and time management; assume responsibility for decisions and actions; display initiative and assertiveness; and demonstrate a willingness to learn.



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