

Assessment Brief



Public Schools of North Carolina

State Board of Education • Phillip J. Kirk, Jr., Chairman • North Carolina Department of Public Instruction • Michael E. Ward, Superintendent

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Understanding Testing: North Carolina Tests of Computer Skills

This publication is an update to the Spring 1996 Assessment Brief "Understanding Testing: North Carolina Test of Computer Skills" (Vol. 2, No. 3R2).

Introduction and Background

In May 1991, the North Carolina State Board of Education, as part of the Quality Assurance Program, established a computer proficiency requirement for graduation, beginning with the Class of 2000. In August of 1995 the State Board modified the requirement by making it effective beginning with the graduating class of 2001. The goals of the requirement are to ensure that (1) most students enter high school with sufficient computer skills, and (2) no student exits North Carolina high schools without sufficient computer skills. The requirement is based on the Computer Skills Curriculum approved in July 1992 by the State Board of Education as defined in the North Carolina *Standard Course of Study*. The test was administered for the first time to eighth-grade students in the 1995-96 school year as a local option.

A Computer Skills Advisory Committee was convened to make recommendations to the State Board of Education related to setting the performance standards for the test and how the test should be included in the accountability model. The general philosophy of the Advisory Committee was that every student should have the opportunity to become computer proficient and that every student will meet the requirement as a way of demonstrating proficiency.

The North Carolina State Board of Education approved the following guidelines (effective 1996-97 and beyond):

- The North Carolina Tests of Computer Skills will be used for student accountability. That is, students must meet the standard (demonstrate computer proficiency) in order to receive a high school diploma.
- Students must demonstrate mastery of computer skills as evidenced by their achievement on both the multiple-choice

and performance tests of the computer skills requirement. Each student is required to take the North Carolina Tests of Computer Skills at least one time by the end of the eighth grade.

- Students who entered the eighth grade during or after the 1996-97 school year (class of 2001) must demonstrate computer skills proficiency as a requirement for graduation. The date that the student was enrolled in the eighth grade determines whether the student must meet the requirement.
- Initially, the standard for proficiency was set at a combined score (both multiple-choice and performance portions of the test) of at least 46 and a performance scale score of at least 49.
- Effective July 1, 1997, at the recommendation of the Computer Skills Advisory Committee after input from educators and others, the State Board of Education modified the standard for passing the computer skills requirement. The revised standard requires that the test be separated into two tests: a multiple-choice test and a performance test. To pass under the new proficiency requirement, a student must achieve a multiple-choice scale score of 47 or above and a performance scale score of 49 or above. After receiving remedial instruction, students are retested only on the test that they did not pass.
- Students not meeting the standard by the end of grade 8 will be given remediation and will have the opportunity to meet the proficiency requirement during high school.
- The demonstration of appropriate computer skills by exceptional students may be determined by program requirements specified in the Individualized Education Program (IEP). For students with disabilities, the IEP Team may exempt the student from one or both tests which may be inappropriate. (Exemption from one or both computer skills tests does not exempt the student from the computer

skills proficiency requirement required to receive a high school diploma.) A standardized portfolio assessment may be used to determine if the student with disabilities is computer proficient. (See Computer Skills Portfolio Accommodation section for an update.)

Computer Skills Curriculum

The 1999-2000 computer skills tests continue to measure the 1992 Computer Skills Curriculum. (See Revised Tests in 2000-2001 section for an update.)

The 1992 Computer Skills Curriculum prepares students to use computer technology for school work and personal use, for accessing and applying information, for problem solving, and for communicating ideas and data. The curriculum also includes objectives for students to understand the societal uses and impact of technology and to exhibit ethical behavior in using technology. The objectives for grades K-8 form a curricular framework which builds on the skills from each previous grade and which establishes technology skills for students to use in other curriculum areas.

There are three major goals for the 1992 Computer Skills Curriculum. The first goal requires students to understand the important issues of a technology-based society and to exhibit ethical behavior in the use of computer technology. The second goal requires students to demonstrate knowledge and skills in using computer technology. The third goal requires students to use a variety of computer technologies to access, analyze, interpret, synthesize, apply, and communicate information.

There are nine strands in the 1992 Computer Skills Curriculum: keyboarding; word processing/desktop publishing; telecomputing; database; spreadsheet; societal issues; ethics; computer terms, operation and care; and independent curriculum software use. The two objectives for the high school years provide a framework for opportunities for students to be independent users of technology for personal and school work.

Test Development

The development of the North Carolina Tests of Computer Skills required the efforts of many North Carolina teachers and curriculum experts. These individuals helped in test development through item writing, item review, and test review. Specially trained educators drafted test items to match specific objectives in the *Teacher Handbook*.

Test Content

The North Carolina Tests of Computer Skills assess the K-8 component of the 1992 Computer Skills Curriculum by multiple-choice and performance questions. The multiple-choice test assesses all nine curriculum strands in the computer skills curriculum. The test takes approximately 90 minutes for administration and has 70 questions.

The performance test, which takes about 90 minutes to administer, consists of four parts:

Keyboarding Techniques (10 minutes). Students create a new file and key several paragraphs. Responses are scored on spacing, typing accuracy, and length.

Word Processing/Editing (10 minutes). Students retrieve a file from a test diskette, hard drive, or server. After students load the word processing file, they make appropriate editing and print the file or save the file to a diskette or hard drive. An edit symbol reference table is provided with the test.

Database Use (25 minutes). Students retrieve and use a prepared database file from the test diskette, hard drive, or server to respond to questions. A scenario is provided for each set of questions. For some questions, students are required to describe the steps used to find an answer.

Spreadsheet Use (15 minutes). Students retrieve and use a prepared spreadsheet file from the test diskette to respond to test questions. A scenario is provided for each set of questions.

Initially, the performance test diskettes were prepared to accommodate the range of integrated software packages commonly used in the schools—*Appleworks* for the Apple II computer, *Microsoft Works* for the Macintosh and DOS-based computers, *First Choice* for DOS-based computers, and *Clarisworks* for the Macintosh. Effective with the 1999-2000 school year, the NCDPI will no longer support the DOS Version of PFS *First Choice* and *Appleworks* 1.0, 2.0, 3.0, and 4.0 for the Apple IIE when providing test diskettes. LEAs that are still using such platforms are to upgrade so that the upgraded platforms provide a higher level of standardization and are more in line with technology requirements for the next century. Currently, the NCDPI is preparing to support *Microsoft Office 2000*.

Procedures for Administration

The testing dates are established locally during the testing window designated by the NCDPI Division of Accountability Services Testing Section. Due to the nature and length of the multiple-choice and performance tests, the NCDPI does not permit both tests to be administered to students on the same day. The computer skills tests are administered initially to all students at grade 8. Students may not take the test earlier than the summer after the completion of the seventh grade.

Remedial Instruction and Re-Testing

Students tested during grade 8 who do not meet the proficiency standard are to receive remedial instruction and re-testing opportunities throughout the students' high school careers and beyond for students who exit without a diploma. Students are to be re-tested only on the test(s) for which they did not meet the

proficiency requirement. Until all requirements are met, each student must have at least one opportunity each year to take each test beginning with the eighth grade year. Each student may participate in a maximum of one test administration date in the fall, one in the spring, and one in the summer. Seniors may have one additional opportunity during the last month of school prior to graduation. Re-testing opportunities are to be permitted until age 21 for students who exit without a diploma. LEAs may choose to provide opportunities beyond the age of 21.

Computer Skills Portfolio Accommodation

According to the State Board of Education, students with disabilities [may] demonstrate proficiency in computer skills by the use of a portfolio if this method is required by the student's Individualized Education Program (IEP) Team or Section 504 Committee. The decision to complete the standardized portfolio accommodation in lieu of taking one or both computer skills tests or part of a computer skills test is determined by the student's IEP Team or Section 504 Committee. The decision must be documented in the IEP or Section 504 Plan.

This accommodation is only available for students with disabilities who cannot take the computer skills test(s) under standard administration conditions or with the use of other accommodations. The purpose of the Computer Skills Portfolio Accommodation is not to provide an easier alternative to demonstrating proficiency, but to provide an appropriate alternative that meets the same high standards as the computer skills tests. The accommodation requires pieces of evidence and extensive documentation.

The expectation is that all students have access to the computer skills curriculum and must have a certain level of mastery before they are ready to begin developing the portfolio. Students must have an opportunity to begin working on the Computer Skills Portfolio Accommodation during the eighth grade year.

The Division of Accountability Services Testing Section developed the rules and procedures for the use of this standardized portfolio accommodation. Additional information is located in the most recent publication of testing accommodations for students with disabilities, *North Carolina Computer Proficiency Requirements: Portfolio Assessment for Students with Disabilities, Computer Skills Portfolio* (notebook), and manual. The portfolio materials are secure testing materials and must remain in a secure (locked) location. Only the superintendent or superintendent's designee, usually the LEA test coordinator, can order secure state testing materials.

Once a student with a disability successfully completes the Computer Skills Portfolio Accommodation, i.e., "at standard," the student has met the computer skills proficiency requirements

for graduation. *An alternate assessment is not required if the Computer Skills Portfolio Accommodation is used.*

Testing Modifications/Accommodations

If appropriate, students with disabilities (including students identified under Section 504) may use accommodations during the administration of the computer skills tests. Only the IEP Team or Section 504 Committee may make this decision. The decision for accommodation use must be documented in the IEP or Section 504 Plan and must be used on a routine basis in the student's regular instructional program. Additional information is located in the most recent publication of *Testing Accommodations and Exemptions for Students with Disabilities*.

Students identified as limited English proficient may use modifications/accommodations during the administration of the computer skills tests. Additional information is located in the most recent publication of *Guidelines for Testing Students with Limited English Proficiency*.

Exempted Students

Although a student with a disability or a student identified as limited English proficient may be exempted from the administration of one or both of the computer skills tests, the exemption does not exempt the student from meeting the proficiency standard for graduation. The decision for determining whether it is appropriate to test a limited English proficient student is based on his/her language proficiency level. Depending on the student's level of language proficiency (i.e., Novice/Low to Intermediate/Low), a student may be exempted for up to two years (24 months) from the date of initial enrollment in the school system.

In all cases, exemption from the computer skills tests or test denies the student the opportunity to meet one of the requirements for a North Carolina high school diploma. All exempt students must be administered an alternate assessment.

When a student is exempted, the parent and student must be advised of the long-term consequences of exemption (not graduating with a diploma). The parent, guardian, surrogate parent, or student (if 18 years of age or older) must sign a statement verifying that the long-term consequences have been fully explained. (In some cases, it may be necessary for the LEA to provide an interpreter.) The signed statement must become part of the student's permanent educational record. Additional information is located in the publications *Testing Accommodations and Exemptions for Students with Disabilities* and *Guidelines for Testing Students with Limited English Proficiency*.

Sample Questions

Each of the following sample questions includes the objective from the Computer Skills Curriculum that is being measured. The best answer choice for each multiple-choice question is marked with an asterisk. In addition, several of the sample questions include the p-value (p). The p-value is the percentage of students who answered the question correctly when the test question was originally administered.

Test Objective 5.3 ($p = 0.58$)

Which special function key would be used to key the sentence: "Today is Tuesday."?

- A return
- B* shift
- C tab
- D esc

Test Objective 7.7 ($p = 0.32$)

You have a database on Latin American countries. Your teacher has asked you to determine which countries lie below the equator and have at least one seaport. The most appropriate search statement would be which of the following?

- A Location = "below equator" and Seaports > 1
- B Location < "equator" or Seaports >= 1
- C Location = "equator" and Seaports > 1
- D* Location = "below equator" and Seaports >= 1

Test Objective 8.4 ($p = 0.30$)

The gym teacher has a new program to calculate physical fitness in terms of weight and exercise. The user inputs different weights or amounts of exercise to determine the related physical fitness. This "What if" program is most likely which of the following types of software?

- A* spreadsheet
- B word processing
- C database
- D graphical

Test Objective 7.5

Which planet has fewer than 6 moons and is less than 37,000,000 miles from the sun (Average Distance from Sun)?

- Answer: _____
- Explanation: Use database terms to describe the steps you took to find your answer

Released Form of Computer Skills Tests

The NCDPI Division of Accountability Services Testing Section released computer skills tests of multiple-choice and performance in September 1997. The released tests are available through the LEA central office or at www.dpi.state.nc.us/accountability/testing.

Student Handbook

Each year the NCDPI Division of Accountability Services Testing Section provides each LEA with student handbooks to distribute to those students who did not meet the computer skills proficiency requirement and need remedial instruction. The student handbook contains information regarding the computer skills proficiency requirement for graduation, contents of the tests, test-taking strategies, and several sample test questions. Copies of the student handbook should be available at the school or the LEA central office.

Revised Tests in 2000-2001

It is standard procedure for North Carolina tests to be revised after the State Board of Education approves a revised state curriculum. The State Board approved the revised Computer Skills Curriculum in May 1998. The implementation of the revised Computer Skills Curriculum began in 1998-99. During 1999-2000, the NCDPI Division of Accountability Services Testing Section may continue field testing in order to revise the computer skills tests to align with the revised curriculum. The revised computer skills tests will be implemented in schools during the 2000-2001 school year.

A few procedural changes will occur once the revised tests are implemented. For example, the Keyboarding and Word Processing/Editing parts of the current computer skills performance test will be combined to make one part of the revised performance test entitled "Desktop Publishing." The LEA will update students, parents, and local staff as additional information is made available.