

**SOUTH CAROLINA
END-OF-COURSE EXAMINATION PROGRAM**

2004–05 OPERATIONAL TEST TECHNICAL REPORT

**Prepared by
Bokhee Yoon, Kyunghee Suh, and Karen Thornton
American Institutes for Research**

**Edited and Issued by the
South Carolina Department of Education**

**Jim Rex
State Superintendent of Education**

September 2008

CONTENTS

| | |
|--------------------------------------------------------------------------|-----|
| LIST OF TABLES | iii |
| CHAPTER 1. HISTORY AND OVERVIEW | 1 |
| CHAPTER 2. STUDENT DEMOGRAPHICS..... | 3 |
| 2.1 Student Participation..... | 3 |
| 2.2 Accommodations | 4 |
| 2.3 Test Administration Time..... | 5 |
| 2.4 Student Questionnaire..... | 7 |
| CHAPTER 3. TEST ADMINISTRATION..... | 8 |
| 3.1 Test Administration Window..... | 8 |
| 3.2 Timing of the Test..... | 8 |
| 3.3 Administration Manuals..... | 8 |
| 3.4 Customized Materials | 9 |
| 3.5 Materials Shipping and Return | 10 |
| 3.6 Test Security | 10 |
| CHAPTER 4. TECHNICAL CHARACTERISTICS OF ITEMS | 12 |
| 4.1 Item Nonresponse Rates | 12 |
| 4.2 Classical Item Statistics | 12 |
| CHAPTER 5. ITEM CALIBRATION AND SCALING | 14 |
| 5.1 Methodology and Software..... | 14 |
| 5.2 Item Calibration and Pre-Equating | 14 |
| 5.3 Scaling..... | 14 |
| 5.4 Definition of Scoreability | 14 |
| 5.5 Reporting of Zero and Perfect Scores..... | 14 |
| 5.6 Percentage of Students Scoring in Each Letter-Grade Equivalent | 15 |
| CHAPTER 6. DESCRIPTIVE STATISTICS..... | 31 |
| CHAPTER 7. RELIABILITY | 33 |
| 7.1 Reliability of Raw Scores | 33 |
| 7.2 Overall and Conditional SEM..... | 33 |
| 7.3 Consistency of Passing Cut Scores | 34 |
| CHAPTER 8. VALIDITY | 36 |
| 8.1 Item Distribution across Content Domains..... | 36 |
| 8.2 Item Development..... | 38 |
| 8.3 Differential Item Functioning | 38 |
| 8.4 Correlations among Content Domains..... | 40 |
| WORKS CITED | 43 |

LIST OF TABLES

| | | |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 2.1 | Summary of 2004–05 EOCEP Student Demographics | 3 |
| 2.2 | Accommodations Used in 2004–05 EOCEP Testing | 5 |
| 2.3 | Test Duration in 2004–05 EOCEP Testing with Regular Forms..... | 6 |
| 2.4 | Test Duration in 2004–05 EOCEP Testing with Customized Forms | 7 |
| 3 | 2004–05 EOCEP Test Administration Windows | 8 |
| 4 | Summary of Classical Item Statistics for the 2004–05 EOCEP Tests..... | 13 |
| 5.1 | Algebra 1/Mathematics for the Technologies 2 EOCEP Test, Regular Schools: Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics..... | 15 |
| 5.2 | Algebra 1/ Mathematics for the Technologies 2 EOCEP Test, Adult Education Programs: Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Subgroups | 17 |
| 5.3 | English 1 EOCEP Test, Regular Schools: Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics | 19 |
| 5.4 | English 1 EOCEP Test, Adult Education Programs: Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics | 21 |
| 5.5 | Biology 1/Applied Biology 2 EOCEP Test, Regular Schools: Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics | 23 |
| 5.6 | Biology 1/Applied Biology 2 EOCEP Test, Adult Education Programs: Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics | 25 |
| 5.7 | Physical Science EOCEP Test, Regular Schools: Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics | 27 |
| 5.8 | Physical Science EOCEP Test, Adult Education Programs: Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics | 29 |

| | | |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 6 | 2004–05 EOCEP Test Administration Summary Statistics: Regular Schools and Adult Education Programs, Overall and by Gender and Race | 31 |
| 7.1 | 2004–05 EOCEP Reliability Coefficients of Raw Scores | 33 |
| 7.2 | 2004–05 EOCEP Conditional Standard Errors of Measurement..... | 34 |
| 7.3 | 2004–05 EOCEP Consistency Index for Passing Scores..... | 35 |
| 8.1 | EOCEP Test Item Distribution by Content Domain for Algebra 1/Mathematics for the Technologies 2..... | 36 |
| 8.2 | EOCEP Test Item Distribution by Content Domain for English 1 | 37 |
| 8.3 | EOCEP Test Item Distribution by Content Domain for Biology 1/Applied Biology 2 | 37 |
| 8.4 | EOCEP Test Item Distribution by Content Domain for Physical Science | 38 |
| 8.5 | Summary of Differential Item Functioning for 2004–05 EOCEP Operational Items | 40 |
| 8.6 | Correlations among Domain Scores for the EOCEP Test in Algebra 1/Mathematics for the Technologies 2..... | 41 |
| 8.7 | Correlations among Domain Scores for the 2004–05 EOCEP Test in English 1 | 41 |
| 8.8 | Correlations among Domain Scores for the 2004–05 EOCEP Test in Biology 1/Applied Biology 2..... | 42 |
| 8.9 | Correlations among Domain Scores for the 2004–05 EOCEP Test in Physical Science | 42 |

CHAPTER 1

HISTORY AND OVERVIEW

The South Carolina Education Accountability Act of 1998 requires the development of end-of-course examinations in gateway, or benchmark, courses for grades nine through twelve. When the program is fully implemented, all students enrolled in End-of-Course Examination Program (EOCEP) courses will take the tests for those courses: Algebra 1, Mathematics for the Technologies 2, English 1, Physical Science, Biology 1, Applied Biology 2, and U.S. History and Constitution.

As they are enunciated in State Board of Education Regulation 43-262.4, the purposes and uses of the EOCEP tests are as follows:

- A. The tests shall promote instruction in the specific academic standards for the courses, encourage student achievement, and document the level of students' mastery of the curriculum standards.
- B. The tests shall serve as indicators of program, school, and school district effectiveness in the manner prescribed by the Education Oversight Committee in accordance with the provisions of the Education Accountability Act of 1998 (EAA).
- C. The tests shall be weighted 20 percent in the determination of students' final grades in the gateway courses.

EOCEP exams will be reported on the basis of the South Carolina uniform grading scale (UGS). The score reported is a scale score and not the percentage of correct answers.

The Algebra 1/Mathematics for the Technologies 2 end-of-course examination was implemented in the baseline year 2002–03 and was operational for the first time in 2003–04. The English 1, Physical Science, and Biology 1/Applied Biology 2 examinations that were field-tested in May 2003 were implemented for the baseline year in 2003–04. These subject-area EOCEP examinations became operational in 2004–05. The U.S. History and Constitution examination is scheduled for field-testing in 2005–06, with baseline implementation in 2006–07 and operational administrations beginning in 2007–08.

The South Carolina Department of Education (SCDE) awarded the contract for the development and scoring of the EOCEP tests in October 2001 to American Institutes for Research (AIR) and its partners Insite, Inc., and Pearson Educational Measurement (PEM). These contractors have undertaken a number of development, review, implementation, and data analysis activities.

All EOCEP exams contain only multiple-choice items. For all subjects (with the exception of U.S. History and Constitution), the tests were operational in 2004–05. Rasch-ability-score-to-scale-score conversion tables were produced prior to each test administration on the basis of the item parameters in the pre-equated item pool. One item on the English 1 test was slightly revised and refield-tested; therefore, the Rasch-ability-score-to-scale-score conversion table for the summer 2005 test form was based on 54 items. This technical report summarizes the results of

statistical and psychometric analyses performed on the 2004–05 operational data for EOCEP tests in algebra, biology, English, and physical science.

In this report, all data are based on the students in the regular schools and in adult education programs only. Data on students in district-approved homeschools have been excluded. (Across the three 2004–05 test administrations, homeschooled students numbered thirty in Algebra 1/Mathematics for the Technologies 2, thirteen in English 1, twelve in Biology 1/Applied Biology 2, and thirteen in Physical Science.)

CHAPTER 2

STUDENT DEMOGRAPHICS

2.1 STUDENT PARTICIPATION

Operational tests for EOCEP Algebra 1/Mathematics for the Technologies 2 and implementation tests for English 1, Biology 1/Applied Biology 2, and Physical Science were administered in 2004–05. All schools administered these tests to the students who completed courses for Algebra 1, Mathematics for the Technologies 2, Biology 1, Applied Biology 2, Physical Science, or English 1 for credit toward a high school diploma.

Demographic data were collected for each student. These data included the categories of gender, race/ethnicity, grade, English language fluency (LEP, limited English proficiency), lunch program participation, individualized education program (IEP) status, disability status, and migrant status. Table 2.1 presents the combined student participation in the three EOCEP administrations (fall, spring, and summer) by the demographic variables.

TABLE 2.1
Summary of 2004–05 EOCEP Student Demographics

| Demographics | Algebra 1/ Mathematics for the Technologies 2 | | English 1 | | Biology 1/ Applied Biology 2 | | Physical Science | |
|------------------------------|-----------------------------------------------------|-------|-----------|-------|---------------------------------|-------|------------------|-------|
| | N | % | N | % | N | % | N | % |
| Overall | 58,188 | 100.0 | 55,526 | 100.0 | 38,631 | 100.0 | 49,452 | 100.0 |
| Gender | | | | | | | | |
| Female | 29,376 | 50.5 | 27,229 | 49.0 | 20,453 | 52.9 | 24,477 | 49.5 |
| Male | 28,606 | 49.2 | 28,027 | 50.5 | 18,057 | 46.7 | 24,803 | 50.2 |
| Unknown | 206 | 0.4 | 270 | 0.5 | 121 | 0.3 | 172 | 0.3 |
| Grade | | | | | | | | |
| 7 | 4 | 0.0 | — | — | — | — | — | — |
| 8 | 1,426 | 2.5 | 2 | 0.0 | 1 | 0.0 | 1 | 0.0 |
| 9 | 12,103 | 20.8 | 5,986 | 10.8 | — | — | 285 | 0.6 |
| 10 | 25,245 | 43.4 | 48,052 | 86.5 | 8,050 | 20.8 | 41,146 | 83.2 |
| 11 | 16,959 | 29.1 | 974 | 1.8 | 24,831 | 64.3 | 6,364 | 12.9 |
| 12 | 1,653 | 2.8 | 202 | 0.4 | 4,077 | 10.6 | 1,107 | 2.2 |
| Adult education | 473 | 0.8 | 29 | 0.1 | 1,476 | 3.8 | 351 | 0.7 |
| Other | 169 | 0.3 | 158 | 0.3 | 140 | 0.4 | 139 | 0.3 |
| Ethnicity | | | | | | | | |
| White | 31,794 | 54.6 | 30,084 | 54.2 | 22,682 | 58.7 | 26,348 | 53.3 |
| African American | 23,152 | 39.8 | 22,154 | 39.9 | 13,947 | 36.1 | 20,492 | 41.4 |
| Hispanic | 1,590 | 2.7 | 1,667 | 3.0 | 952 | 2.5 | 1,356 | 2.7 |
| Asian/Hawaiian-Pac. Islander | 633 | 1.1 | 612 | 1.1 | 519 | 1.3 | 494 | 1.0 |
| American Indian | 125 | 0.2 | 135 | 0.2 | 64 | 0.2 | 101 | 0.2 |
| Other | 621 | 1.1 | 622 | 1.1 | 352 | 0.9 | 526 | 1.1 |
| Unknown | 273 | 0.5 | 252 | 0.5 | 115 | 0.3 | 135 | 0.3 |

TABLE 2.1
Summary of 2004–05 EOCEP Student Demographics

| Demographics | Algebra 1/ Mathematics for the Technologies 2 | | English 1 | | Biology 1/ Applied Biology 2 | | Physical Science | |
|-----------------------------|-----------------------------------------------------|------|-----------|------|---------------------------------|------|------------------|------|
| | N | % | N | % | N | % | N | % |
| Language | | | | | | | | |
| English speaker | 54,962 | 94.5 | 52,657 | 94.8 | 37,211 | 96.3 | 47,246 | 95.5 |
| Exited | 361 | 0.6 | 358 | 0.6 | 234 | 0.6 | 230 | 0.5 |
| LEP mainstream | 181 | 0.3 | 192 | 0.3 | 118 | 0.3 | 182 | 0.4 |
| Full LEP | 544 | 0.9 | 638 | 1.1 | 236 | 0.6 | 507 | 1.0 |
| Waiver | 43 | 0.1 | 44 | 0.1 | 33 | 0.1 | 41 | 0.1 |
| Other | 2,097 | 3.6 | 1,637 | 2.9 | 799 | 2.1 | 1246 | 2.5 |
| Lunch | | | | | | | | |
| Free meals | 19,839 | 34.1 | 21,134 | 38.1 | 11,166 | 28.9 | 19,275 | 39.0 |
| Reduced-price meals | 4,081 | 7.0 | 3,943 | 7.1 | 2,431 | 6.3 | 3,574 | 7.2 |
| No free/reduced-price meals | 32,114 | 55.2 | 28,925 | 52.1 | 24,344 | 63.0 | 25,359 | 51.3 |
| Unknown | 2,154 | 3.7 | 1,524 | 2.7 | 690 | 1.8 | 1,244 | 2.5 |
| IEP | | | | | | | | |
| Yes | 4,725 | 8.1 | 5,614 | 10.1 | 2,013 | 5.2 | 4,904 | 9.9 |
| No | 5,115 | 8.8 | 5,854 | 10.5 | 3,843 | 9.9 | 5,634 | 11.4 |
| Unknown | 48,348 | 83.1 | 44,058 | 79.3 | 32,775 | 84.8 | 38,914 | 78.7 |
| Migrant | | | | | | | | |
| Yes | 60 | 0.1 | 90 | 0.2 | 40 | 0.1 | 68 | 0.1 |
| No | 8,514 | 14.6 | 9,290 | 16.7 | 5,685 | 14.7 | 8,804 | 17.8 |
| Unknown | 49,614 | 85.3 | 46,146 | 83.1 | 32,906 | 85.2 | 40,580 | 82.1 |
| Gifted/talented | | | | | | | | |
| Academic | 8,982 | 15.4 | 6,944 | 12.5 | 3,717 | 9.6 | 4,147 | 8.4 |
| Artistic | 372 | 0.6 | 264 | 0.5 | 252 | 0.7 | 254 | 0.5 |
| Both academic and artistic | 470 | 0.8 | 250 | 0.5 | 103 | 0.3 | 82 | 0.2 |
| No | 46,372 | 79.7 | 46,620 | 84.0 | 33,890 | 87.7 | 43,704 | 88.4 |
| Unknown | 1,992 | 3.4 | 1,448 | 2.6 | 669 | 1.7 | 1,265 | 2.6 |
| 504 plan | | | | | | | | |
| Yes | 573 | 1.0 | 514 | 0.9 | 370 | 1.0 | 466 | 0.9 |
| No | 54,481 | 93.6 | 53,066 | 95.6 | 37,450 | 96.9 | 47,531 | 96.1 |
| Unknown | 3,134 | 5.4 | 1,946 | 3.5 | 811 | 2.1 | 1,455 | 2.9 |
| Alternative school | | | | | | | | |
| Yes | 736 | 1.3 | 1,157 | 2.1 | 362 | 0.9 | 850 | 1.7 |
| No | 9,993 | 17.2 | 10,241 | 18.4 | 6,438 | 16.7 | 9,472 | 19.2 |
| Unknown | 47,459 | 81.6 | 44,128 | 79.5 | 31,831 | 82.4 | 39,130 | 79.1 |

2.2 ACCOMMODATIONS

Supplemental information regarding the administration of the EOCEP to students with disabilities is contained in the EOCEP test administration manuals (SCDE 2004b, 2005b, and 2005d). These manuals provide guidelines for IEP teams in making decisions about testing students with disabilities and gives specific information regarding testing accommodations and modifications, test forms and materials, and test administration procedures.

A student with a documented disability is one who has been evaluated and found to meet the eligibility criteria for enrollment in special education as defined by the 1997 amendments to the Individuals with Disabilities Education Act and by State Board of Education Regulation 43-243.1, or one who has a disability covered under Section 504 of the Rehabilitation Act of 1973. The IEP or 504 plan team determines how a student with disabilities participates in the EOCEP assessments. Decisions about accommodations and modifications must be made on an individual student basis, not on the basis of the category of disability. Table 2.2 presents the percentages of accommodations used in the 2004–05 testing.

TABLE 2.2
Accommodations Used in 2004–05 EOCEP Testing

| Accommodations | Algebra 1/ Mathematics for the Technologies 2 | English 1 | Biology 1/ Applied Biology 2 | Physical Science |
|------------------------|-----------------------------------------------------|--------------|---------------------------------|---------------------|
| | Regular Form | | | |
| | (N = 56,726) | (N = 53,796) | (N = 38,067) | (N = 47,881) |
| Setting | 1.2 | 1.5 | 0.9 | 1.6 |
| Timing | 0.1 | 0.2 | 0.1 | 0.1 |
| Scheduling | 0.0 | 0.0 | 0.0 | 0.0 |
| Response options | 0.0 | 0.0 | 0.0 | 0.0 |
| Presentation | 0.0 | 0.1 | 0.1 | 0.0 |
| Use of calculator | — | — | — | 0.4 |
| Customized Form | | | | |
| | (N = 1,462) | (N = 1,730) | (N = 564) | (N = 1,571) |
| Setting | 73.7 | 74.0 | 77.3 | 71.7 |
| Timing | 12.5 | 11.5 | 9.6 | 9.8 |
| Scheduling | 4.4 | 5.8 | 4.6 | 4.0 |
| Response options | 1.5 | 2.5 | 4.3 | 3.1 |
| Presentation | 57.3 | 48.7 | 60.3 | 55.1 |
| Use of calculator | — | — | — | 19.5 |

Total responses in each column may exceed 100 percent because some students received accommodations in more than one category.

2.3 TEST ADMINISTRATION TIME

In addition to providing their demographic information, students were asked to record on their answer documents the exact times that they started and finished the test. These answer documents were scanned, and the total elapsed time was calculated for each student.

Across all subjects, 4 to 11 percent of the students who were administered the regular forms and 0.3 to 14 percent of the students who were administered the customized forms recorded invalid times or left one or both times blank. Consequently, it was not possible to calculate a total testing time for these students. The number of students who finished the test within two hours ranged from 80 to 95 percent for the regular forms and from 80 to 90 percent for the customized forms across subjects, as tables 2.3 and 2.4 reflect.

TABLE 2.3

Test Duration in 2004–05 EOCEP Testing with Regular Forms

| Time Taken | Algebra 1/Mathematics for the Technologies 2 | | | English 1 | | |
|--------------|----------------------------------------------|-----------------------------|----------------------------|--------------------------|-----------------------------|----------------------------|
| | Fall 2004 (N = 8,847) | Spring 2005 (N = 46,233) | Summer 2005 (N = 1,646) | Fall 2004 (N = 8,124) | Spring 2005 (N = 44,658) | Summer 2005 (N = 1,014) |
| 15 min | 0.5 | 0.4 | 0.2 | 0.6 | 0.4 | 0.5 |
| 30 min | 3.0 | 2.1 | 2.1 | 2.4 | 2.3 | 1.1 |
| 45 min | 13.6 | 10.7 | 10.0 | 12.3 | 12.8 | 3.3 |
| 1 hr | 26.0 | 25.1 | 20.7 | 27.3 | 27.5 | 10.0 |
| 1 hr 15 min | 20.8 | 23.0 | 21.4 | 21.3 | 23.2 | 17.9 |
| 1 hr 30 min | 12.0 | 15.5 | 16.8 | 12.6 | 13.4 | 19.8 |
| 1 hr 45 min | 6.4 | 8.4 | 10.2 | 6.8 | 6.9 | 15.1 |
| 2 hr | 3.4 | 4.5 | 6.7 | 3.9 | 3.6 | 12.9 |
| 2 hr 15 min | 1.5 | 2.1 | 2.8 | 1.8 | 1.7 | 7.1 |
| 2 hr 30 min | 0.7 | 0.9 | 1.8 | 0.9 | 0.8 | 4.0 |
| 2 hr 45 min | 0.4 | 0.6 | 0.7 | 0.3 | 0.4 | 1.2 |
| 3 hr or more | 0.8 | 0.7 | 1.2 | 0.6 | 0.6 | 2.8 |
| Invalid* | 10.9 | 5.9 | 5.4 | 9.2 | 6.3 | 4.4 |

| Time Taken | Biology 1/Applied Biology 2 | | | Physical Science | | |
|--------------|-----------------------------|-----------------------------|--------------------------|---------------------------|-----------------------------|--------------------------|
| | Fall 2004 (N = 11,258) | Spring 2005 (N = 26,638) | Summer 2005 (N = 171) | Fall 2004 (N = 12,915) | Spring 2005 (N = 34,712) | Summer 2005 (N = 254) |
| 15 min | 0.7 | 0.8 | 1.2 | 0.7 | 0.8 | 1.2 |
| 30 min | 12.4 | 11.7 | 9.4 | 4.4 | 5.4 | 8.3 |
| 45 min | 34.6 | 36.7 | 27.5 | 22.1 | 24.2 | 15.4 |
| 1 hr | 27.1 | 29.6 | 32.2 | 30.9 | 32.5 | 31.9 |
| 1 hr 15 min | 9.4 | 10.4 | 15.2 | 16.7 | 17.3 | 13.0 |
| 1 hr 30 min | 3.0 | 3.4 | 6.4 | 7.5 | 7.1 | 5.9 |
| 1 hr 45 min | 1.4 | 1.6 | 3.5 | 4.1 | 3.3 | 7.9 |
| 2 hr | 0.6 | 0.6 | — | 2.2 | 1.6 | 7.5 |
| 2 hr 15 min | 0.3 | 0.3 | — | 0.9 | 0.8 | 0.8 |
| 2 hr 30 min | 0.2 | 0.1 | — | 0.5 | 0.3 | 0.4 |
| 2 hr 45 min | 0.0 | 0.1 | — | 0.2 | 0.1 | — |
| 3 hr or more | 0.1 | 0.2 | — | 0.3 | 0.2 | — |
| Invalid* | 10.1 | 4.6 | 4.7 | 9.5 | 6.5 | 7.9 |

* includes responses with no mark or multiple marks on start and/or stop time fields, making it impossible to compute the difference between start and stop times

TABLE 2.4
Test Duration in 2004–05 EOCEP Testing with Customized Forms

| Time Taken | Algebra 1/Mathematics for the Technologies 2 | | | English 1 | | |
|--------------|----------------------------------------------|----------------------------|-------------------------|------------------------|----------------------------|-------------------------|
| | Fall 2004 (N = 320) | Spring 2005 (N = 1,096) | Summer 2005 (N = 46) | Fall 2004 (N = 297) | Spring 2005 (N = 1,373) | Summer 2005 (N = 60) |
| 15 min | 1.6 | 0.6 | 2.2 | 0.3 | 0.3 | 1.7 |
| 30 min | 3.1 | 4.1 | 17.4 | 0.3 | 1.0 | — |
| 45 min | 7.5 | 11.7 | 17.4 | 3.4 | 3.7 | 1.7 |
| 1 hr | 13.1 | 21.0 | 10.9 | 11.8 | 14.8 | 26.7 |
| 1 hr 15 min | 16.9 | 20.3 | 6.5 | 22.6 | 24.2 | 18.3 |
| 1 hr 30 min | 17.5 | 15.0 | 15.2 | 20.5 | 15.7 | 16.7 |
| 1 hr 45 min | 10.3 | 9.2 | 8.7 | 21.5 | 16.0 | 16.7 |
| 2 hr | 10.3 | 4.9 | 6.5 | 5.1 | 7.4 | 5.0 |
| 2 hr 15 min | 2.8 | 2.7 | — | 2.7 | 3.1 | 1.7 |
| 2 hr 30 min | 1.9 | 1.2 | — | 1.0 | 2.8 | — |
| 2 hr 45 min | 1.3 | 0.5 | 10.9 | — | 0.5 | — |
| 3 hr or more | 2.8 | 2.0 | — | — | 1.4 | 1.7 |
| Invalid* | 10.9 | 6.8 | 4.3 | 10.8 | 9.1 | 10.0 |

| Time Taken | Biology 1/Applied Biology 2 | | | Physical Science | | |
|--------------|-----------------------------|--------------------------|------------------------|------------------------|----------------------------|-------------------------|
| | Fall 2004 (N = 148) | Spring 2005 (N = 412) | Summer 2005 (N = 4) | Fall 2004 (N = 458) | Spring 2005 (N = 1,102) | Summer 2005 (N = 11) |
| 15 min | 1.4 | — | — | 0.9 | 0.5 | — |
| 30 min | 2.0 | 3.4 | — | 2.0 | 5.2 | 9.1 |
| 45 min | 15.5 | 19.9 | 25.0 | 10.5 | 16.6 | — |
| 1 hr | 34.5 | 35.0 | 25.0 | 27.5 | 27.4 | 27.3 |
| 1 hr 15 min | 23.0 | 13.6 | — | 18.8 | 20.0 | 9.1 |
| 1 hr 30 min | 3.4 | 8.3 | 25.0 | 12.9 | 10.2 | 9.1 |
| 1 hr 45 min | 0.7 | 3.9 | — | 8.5 | 6.4 | — |
| 2 hr | 3.4 | 3.2 | 25.0 | 0.7 | 4.0 | — |
| 2 hr 15 min | 2.7 | 0.5 | — | 1.7 | 2.4 | — |
| 2 hr 30 min | — | 0.5 | — | 1.7 | 1.1 | — |
| 2 hr 45 min | — | 0.5 | — | 0.2 | 0.4 | — |
| 3 hr or more | 1.4 | 3.2 | — | 0.2 | 0.7 | 9.1 |
| Invalid* | 12.2 | 8.3 | — | 14.4 | 5.3 | 36.4 |

* includes responses with no mark or multiple marks on start and/or stop time fields, making it impossible to compute the difference between start and stop times

2.4 STUDENT QUESTIONNAIRE

After the administration of the EOCEP test in each subject, students were instructed to complete a questionnaire that addressed such topics as the difficulty of the test, the nature of the instruction they had received in the particular course, their use of calculators in the particular course (algebra only), and the amount of time they had spent engaged in lab activities in the particular course (biology and physical science only).

CHAPTER 3

TEST ADMINISTRATION

3.1 TEST ADMINISTRATION WINDOW

The test administration dates for 2004–05 are given in table 3, below. School districts were required to administer all EOCEP tests within a single five-day period. Districts were instructed to administer makeup tests following their regular testing period. For all three EOCEP administrations, district test coordinators (DTCs) were responsible for providing the testing schedule to all school test coordinators (STCs) in their particular districts.

For students who missed the originally scheduled EOCEP test due to a death in the family, illness, or another situation deemed valid by the state, school districts were required to have a five-day makeup period the week immediately following the original test administration. It was recommended that a single makeup test be given per day, but two could have been given per day if necessary.

TABLE 3
2004–05 EOCEP Test Administration Windows

| Administration | Dates |
|-----------------------|-----------------------------------|
| Fall 2004 | December 8, 2004–January 24, 2005 |
| Spring 2005 | May 2, 2005–June 9, 2005 |
| Summer 2005 | June 20, 2005–August 5, 2005 |

3.2 TIMING OF THE TEST

The EOCEP tests were not timed; however, each session had to be administered during a single day (unless a student’s IEP or 504 plan specifically stated that he or she needed to have the test administered over several days). To ensure an accurate assessment, districts and schools were instructed that students should be given as much uninterrupted time as they needed to complete the test.

3.3 ADMINISTRATION MANUALS

Working with the SCDE, AIR staff drafted the administration manuals for the test. SCDE staff reviewed and revised the manuals, and the AIR finalized and printed them. The EOCEP district test coordinator supplements (SCDE 2004a, 2005a, and 2005c) and the EOCEP test administration manuals (TAMs) were produced for each administration of the EOCEP. The DTC supplements included only the information that DTCs needed for the administration of the EOCEP tests. The TAMs contained the information that STCs, test administrators (TAs), and monitors needed to administer the tests to students in their schools.

The TAMs and the supplements included logistical and administration procedures as well as the directions (scripts) for administering the tests. The DTCs, STCs, and TAs were encouraged to use a form provided in the manuals to offer comments and suggestions on the procedures therein. The comments were compiled in a spreadsheet and sent to the SCDE to review and to use as the basis for potential changes in test procedures. The TAMs also included a testing irregularity form that test administrators were instructed to use to report any problems or deviations from established testing procedures.

Appendix C in the TAMs includes a detailed description of materials available, as well as additional graphics for completing student demographic information and returning scorable and nonscorable test materials. Tables showing the types of customized materials available for students who require such special testing formats were also provided.

3.4 CUSTOMIZED MATERIALS

Customized formats of the EOCEP test were available for Algebra 1/Mathematics for the Technologies 2, Biology 1/Applied Biology 2, Physical Science, and English 1:

- Loose-leaf test booklets—printed single-sided, one item to a page, and bound in three-ring binders—allowed individuals to remove the pages, if necessary, during testing.
- Large-print booklets were produced for students who have difficulty reading text in a standard-size font. The large-print version used an 18-point sans serif font and was issued as a 9 x 12-inch spiral-bound booklet.
- Braille booklets were produced for students who typically read classroom materials in braille. The braille version was issued as spiral-bound booklet containing 11½ x 11-inch interpoint braille pages.
- A regular print Form C test booklet was provided in test packets for students or TAs to use with customized formats such as the oral script, braille, large-print, loose-leaf, and sign language versions. These booklets were saddle-stitched and printed in a 12-point font, just as the regular, noncustomized test booklets were.
- For students whose IEP or 504 plan requires the oral administration of tests, oral administration scripts gave specific directions to TAs regarding the appropriate way to read the test questions, the passages on which the questions were based, and the answer choices.

Beginning in spring 2005, audiocassettes were also produced to be used in the oral administration of the tests. These audiocassettes contained the directions for administering the tests, the passages that were the basis of the questions, the test questions, and the answer choices. The audiocassettes and the oral administration scripts contained the same information.

- Sign language videotapes—produced for Algebra 1/Mathematics for the Technologies 2, English 1, Biology 1/Applied Biology 2, and Physical Science—included the signed test directions, questions, and response options. The videotapes were produced in two languages: American Sign Language and Pidgin Signed English.

3.5 MATERIALS SHIPPING AND RETURN

For all three administrations, test materials were shipped to district offices approximately two weeks before testing—in time for the DTCs to be able to distribute school materials at least one week before the schools' test dates. Each school's shipment was boxed individually and labeled with the total number of boxes shipped to that school.

The district office was also sent a shipment of noncustomized overage materials, which were to be used by the DTCs to complete any additional materials requests from the STCs. Materials in customized formats were sent only to the schools and only in the quantities ordered.

TAs were instructed to return their test materials to the STCs immediately after the test administration. The STCs then redistributed test materials to the TAs who needed them in order to administer makeup tests. Those TAs were instructed to return the makeup test materials to their STC immediately after the makeup session. DTCs were to arrange for the pickup of all scorable materials for return to PEM within three days after testing.

Because the test scores were required to be reported back to the schools quickly for calculating final course grades, a rapid scoring and reporting process was utilized for all three administrations. Each school district could return the scorable materials to PEM, in as many as five separate shipments, as they arrived from the schools. Nonscorable materials were to be returned in one shipment within three days of the completion of makeup tests. For all three administrations, step-by-step instructions for returning scorable and nonscorable materials were included in the district materials. These instructions listed the toll-free phone numbers of the trucking companies that the DTCs were instructed to call to schedule pickups of return materials

3.6 TEST SECURITY

Test security is an important issue before, during, and following test administrations. The specific procedures to be followed during the EOCEP test administrations are outlined in the *Test Administration Manual* (SCDE 2004b). Reprinted in the manual are an excerpt from Section 59-1-445 of the South Carolina Code of Laws, a summary of Section 59-1-447 of the Code of Laws, and the entirety of State Board of Education Regulation 43-100.

Section 59-1-445 states in part:

It is unlawful for anyone knowingly and wilfully [*sic*] to violate security procedures regulations promulgated by the State Board of Education for mandatory tests administered by or through the State Board of Education to students or educators, or knowingly and willfully to:

- (a) Give examinees access to test questions prior to testing;
- (b) Copy, reproduce, or use in any manner inconsistent with test security regulations all or any portion of any secure test booklet;
- (c) Coach examinees during testing or alter or interfere with examinees' responses in any way;
- (d) Make answer keys available to examinees;

- (e) Fail to follow security regulations for distribution and return of secure test [materials] as directed, or fail to account for all secure test materials before, during, and after testing;
- (f) Participate in, direct, aid, counsel, assist in, encourage, or fail to report any of the acts prohibited in this section.

Regulation 43-100 mandates that “Each local school board must develop and adopt a district test security policy” with procedures for the storage and handling of all test materials and that each district superintendent must annually designate a DTC. The regulation and the *TAM* provide specific security guidelines regarding various aspects of the test administration process (e.g., the storage and handling of test materials, the responsibility of administrators to monitor students during testing and to remove supplemental materials from the testing room, and the requirement that administrators refrain from interference with student responses).

Following the test administration and the return of materials, the DRC generated a missing-document report, listing the identification numbers of unreturned secure materials. The report was used to notify districts of missing materials. A toll-free telephone line was manned to answer questions regarding missing documents, and follow-up procedures were employed until all materials were accounted for. Subsequently, the districts located and returned the materials or sent signed statements indicating that all secure materials had been returned.

Secure Materials

Secure materials—each assigned a human- and machine-readable security identification number—are test booklets, answer documents, customized test materials, and secure administration manuals. Secure materials were locked in storage until the day of the test administration and were signed out when they were to be used, and signed in when they were returned. These materials were not to be left unattended at any time.

CHAPTER 4

TECHNICAL CHARACTERISTICS OF ITEMS

This chapter reports the results of item analyses based on classical test theory (CTT) using a proprietary program designed by the AIR. Item difficulty (p) is the proportion (or percentage) of examinees correctly answering a dichotomously scored item.

Item discrimination is defined as a correlation between the item score and the total score. For the discrimination index, point-biserial correlations were produced. In computing the point-biserial correlation, the AIR corrected for spuriousness. In the recoding of missing data for item analysis, all omitted and not-reached items were recoded as incorrect, with a zero score. After discussions between the SCDE and the AIR, it was decided to exclude from the CTT item analyses and item calibrations those students who had used customized test materials.

4.1 ITEM NONRESPONSE RATES

Although the EOCEP tests were not timed, students were required to finish each test during one school day, unless they had an IEP that allowed for accommodations in administration. Districts and schools were instructed that, if they had space and staff available, students should be given as much uninterrupted time as necessary to take the test to ensure an accurate assessment.

The item nonresponse rates indicate the percentage of students who did not reach a particular item and all items thereafter. The item omit rates indicate the percentage of students who did not respond to that particular item but did respond to a later item. The percentages for not-reached and omit rates were quite low—less than 1 percent—in all subjects. These data indicate that students were given ample time to complete the test in every subject.

4.2 CLASSICAL ITEM STATISTICS

Table 4, on the following page, provides a summary of item p -values and item discrimination values for operational items for all three administrations.

TABLE 4

Summary of Classical Item Statistics for the 2004–05 EOCEP Test

| Administration | Number of Items | Average <i>p</i>-value | Average Adjusted Point-Biserial Correlation |
|-----------------------------------------------------|------------------------|-------------------------------|----------------------------------------------------|
| Algebra 1/Mathematics for the Technologies 2 | | | |
| Fall 2004 | 50 | 0.52 | 0.28 |
| Spring 2005 | 50 | 0.59 | 0.35 |
| Summer 2005 | 50 | 0.49 | 0.21 |
| English 1 | | | |
| Fall 2004 | 55 | 0.62 | 0.34 |
| Spring 2005 | 55 | 0.68 | 0.36 |
| Summer 2005 | 55 | 0.60 | 0.29 |
| Biology 1/Applied Biology 2 | | | |
| Fall 2004 | 55 | 0.56 | 0.28 |
| Spring 2005 | 55 | 0.56 | 0.30 |
| Summer 2005 | 55 | 0.47 | 0.23 |
| Physical Science | | | |
| Fall 2004 | 55 | 0.49 | 0.28 |
| Spring 2005 | 55 | 0.48 | 0.28 |
| Summer 2005 | 55 | 0.44 | 0.20 |

CHAPTER 5

ITEM CALIBRATION AND SCALING

5.1 METHODOLOGY AND SOFTWARE

The one-parameter Rasch model (Rasch 1960; Wright and Stone 1979) was used to calibrate all items, using WINSTEPS software (see Linacre and Wright 2003). The WINSTEPS program employs joint maximum likelihood estimation, an approach that estimates the item and person parameters simultaneously.

5.2 ITEM CALIBRATION AND PRE-EQUATING

The AIR conducted field tests with a sufficient number of items to create precalibrated item pools and to construct pre-equated operational-test forms for all tests. For all subjects, the Rasch-ability-score-to-scale-score conversion tables were produced prior to each test administration based on the item parameters in the pre-equated item pools.

5.3 SCALING

The SCDE provided the AIR with initial Rasch-ability-score-to-scale-score conversion tables that showed the transformation of the ability score interval for each scale score for each subject area. The AIR then applied these tables specifically to each test form for each subject area on the basis of the pre-equated item pool. The conversion tables took into account any differences in the difficulty of the various forms. All items shared a common metric so that the scale scores developed for each form were automatically adjusted for differences in item difficulty. For all EOCEP test subjects, the scale scores are now reported according to the South Carolina UGS. Scale scores range from 0 to 100 with a minimum passing score of 70. Each scale score is assigned a letter-grade equivalent (A, B, C, D, or F) in accordance with the UGS.

5.4 DEFINITION OF SCOREABILITY

A student was considered “tested” if the student answered at least one question in the answer document. All tested students’ item responses were scored. All omits and not-reached items were recoded as incorrect, with a zero score.

5.5 REPORTING OF ZERO AND PERFECT SCORES

In item response theory (IRT), zero and perfect scores are assigned the ability of minus and plus infinity. The AIR used the WINSTEPS default setting in estimating finite values for the extreme scores. In other words, a fractional score point value was subtracted from perfect scores, and was added to zero scores. The WINSTEPS default value for adjusting the extreme scores for extreme measures is 0.3.

5.6 PERCENTAGE OF STUDENTS SCORING IN EACH LETTER-GRADE EQUIVALENT

Tables 5.1 through 5.8 report student performance for all administrations combined. The results are summarized separately for regular schools and for adult education programs. The number and percentage of students in each letter-grade equivalent and the mean scale score are reported for the test-takers overall and by demographic category.

TABLE 5.1

Algebra 1/Mathematics for the Technologies 2 EOCEP Test, Regular Schools: Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|---------------------------------|--------|------------------|------|------|------|------|------|
| Overall | 58,019 | 79.9 | 15.8 | 18.8 | 26.5 | 18.7 | 20.3 |
| Gender | | | | | | | |
| Female | 29,300 | 80.1 | 15.1 | 19.1 | 27.6 | 19.3 | 18.9 |
| Male | 28,514 | 79.8 | 16.5 | 18.5 | 25.4 | 18.0 | 21.6 |
| Unknown | 205 | 76.1 | 12.7 | 14.6 | 18.0 | 19.5 | 35.1 |
| Grade | | | | | | | |
| 6 | 4 | 92.0 | 75.0 | 0.0 | 0.0 | 25.0 | 0.0 |
| 7 | 1,426 | 92.9 | 58.8 | 24.5 | 12.3 | 3.0 | 1.4 |
| 8 | 12,103 | 89.3 | 40.8 | 29.3 | 19.8 | 6.5 | 3.6 |
| 9 | 25,245 | 79.2 | 11.3 | 20.2 | 29.8 | 18.7 | 20.1 |
| 10 | 16,959 | 74.1 | 2.6 | 10.0 | 27.8 | 27.5 | 32.1 |
| 11 | 1,653 | 73.2 | 2.5 | 9.4 | 24.7 | 27.6 | 35.7 |
| 12 | 473 | 75.6 | 5.9 | 13.1 | 26.4 | 25.2 | 29.4 |
| Other | 156 | 73.3 | 3.8 | 9.0 | 25.0 | 23.7 | 38.5 |
| Ethnicity | | | | | | | |
| White | 31,737 | 83.5 | 23.2 | 23.6 | 26.9 | 14.4 | 11.9 |
| African American | 23,048 | 75.0 | 5.2 | 12.3 | 26.3 | 24.7 | 31.5 |
| Hispanic | 1,588 | 77.9 | 12.0 | 16.1 | 26.7 | 19.0 | 26.2 |
| Asian/Hawaiian-Pac. Islander | 631 | 86.9 | 35.0 | 24.6 | 21.6 | 9.7 | 9.2 |
| American Indian | 125 | 81.4 | 19.2 | 21.6 | 22.4 | 23.2 | 13.6 |
| Other | 618 | 78.4 | 13.3 | 16.5 | 23.9 | 19.9 | 26.4 |
| Unknown | 272 | 78.8 | 23.5 | 13.2 | 14.7 | 16.2 | 32.4 |
| Language | | | | | | | |
| English speaker | 54,816 | 80.2 | 16.2 | 19.2 | 26.7 | 18.4 | 19.5 |
| Exited | 361 | 82.0 | 20.8 | 21.3 | 24.7 | 16.6 | 16.6 |
| LEP mainstream | 180 | 79.3 | 15.6 | 16.7 | 27.2 | 16.1 | 24.4 |
| Full LEP | 544 | 74.2 | 6.6 | 10.5 | 23.7 | 22.2 | 36.9 |
| Waiver | 42 | 80.6 | 21.4 | 9.5 | 33.3 | 14.3 | 21.4 |
| Other | 2,076 | 73.8 | 6.0 | 10.1 | 21.5 | 24.8 | 37.6 |

TABLE 5.1

**Algebra 1/Mathematics for the Technologies 2 EOCEP Test, Regular Schools:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|-----------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Lunch | | | | | | | |
| Free meals | 19,794 | 75.8 | 6.3 | 14.0 | 26.6 | 23.7 | 29.3 |
| Reduced-price meals | 4,076 | 79.2 | 11.4 | 19.2 | 29.7 | 20.2 | 19.6 |
| No free/reduced-price meals | 32,037 | 83.0 | 22.9 | 22.3 | 26.4 | 14.9 | 13.5 |
| Unknown | 2,112 | 73.1 | 4.9 | 9.4 | 21.3 | 25.0 | 39.4 |
| IEP | | | | | | | |
| Yes | 4,716 | 71.3 | 2.3 | 7.3 | 19.6 | 24.4 | 46.5 |
| No | 5,017 | 76.7 | 10.4 | 13.1 | 25.7 | 22.3 | 28.6 |
| Unknown | 48,286 | 81.1 | 17.6 | 20.5 | 27.3 | 17.7 | 16.8 |
| Migrant | | | | | | | |
| Yes | 59 | 77.2 | 6.8 | 16.9 | 28.8 | 28.8 | 18.6 |
| No | 8,396 | 75.5 | 8.5 | 12.0 | 23.9 | 23.0 | 32.5 |
| Unknown | 49,564 | 80.7 | 17.0 | 20.0 | 26.9 | 17.9 | 18.2 |
| Courses taken | | | | | | | |
| 2111 (Alg 1, grade 7 or 8) | 10,223 | 89.5 | 42.0 | 28.5 | 19.8 | 6.2 | 3.4 |
| 3142 (Math Tech 2) | 19,171 | 73.6 | 2.2 | 9.2 | 27.2 | 27.9 | 33.5 |
| 4111 (Alg 1) | 26,654 | 81.1 | 16.0 | 22.5 | 28.9 | 16.6 | 16.1 |
| Other | 1,971 | 75.1 | 8.8 | 12.1 | 22.4 | 21.8 | 35.0 |
| Gifted/talented | | | | | | | |
| Academic | 8,977 | 92.1 | 52.4 | 29.4 | 14.1 | 2.8 | 1.3 |
| Artistic | 372 | 82.9 | 18.3 | 28.2 | 26.6 | 15.6 | 11.3 |
| Both academic and artistic | 467 | 93.5 | 59.7 | 25.5 | 12.6 | 1.7 | 0.4 |
| No | 46,252 | 77.7 | 8.6 | 17.0 | 29.3 | 21.6 | 23.4 |
| Unknown | 1,951 | 73.0 | 5.2 | 9.3 | 20.2 | 25.4 | 39.9 |
| 504 plan | | | | | | | |
| Yes | 572 | 79.5 | 15.6 | 18.5 | 26.6 | 18.4 | 21.0 |
| No | 54,359 | 80.1 | 16.1 | 19.1 | 26.7 | 18.3 | 19.7 |
| Unknown | 3,088 | 76.1 | 9.4 | 13.1 | 23.6 | 24.5 | 29.4 |
| Alternative school | | | | | | | |
| Yes | 663 | 69.9 | 1.8 | 5.7 | 18.1 | 21.6 | 52.8 |
| No | 9,949 | 77.5 | 13.3 | 14.1 | 23.5 | 20.8 | 28.3 |
| Unknown | 47,407 | 80.6 | 16.5 | 20.0 | 27.3 | 18.2 | 18.1 |

TABLE 5.2

**Algebra 1/ Mathematics for the Technologies 2 EOCEP Test, Adult Education Programs:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Subgroups**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|------------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Overall | 169 | 71.0 | 1.8 | 4.7 | 20.1 | 31.4 | 42.0 |
| Gender | | | | | | | |
| Female | 76 | 71.2 | 1.3 | 3.9 | 23.7 | 32.9 | 38.2 |
| Male | 92 | 70.9 | 2.2 | 5.4 | 17.4 | 30.4 | 44.6 |
| Unknown | 1 | 68.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Grade | | | | | | | |
| 8 | 4 | 74.0 | 0.0 | 0.0 | 25.0 | 50.0 | 25.0 |
| 9 | 42 | 71.5 | 0.0 | 7.1 | 21.4 | 33.3 | 38.1 |
| 10 | 41 | 71.7 | 2.4 | 7.3 | 17.1 | 34.1 | 39.0 |
| 11 | 2 | 67.5 | 0.0 | 0.0 | 50.0 | 0.0 | 50.0 |
| 12 | 26 | 72.0 | 0.0 | 0.0 | 38.5 | 26.9 | 34.6 |
| Other | 54 | 69.6 | 3.7 | 3.7 | 11.1 | 29.6 | 51.9 |
| Ethnicity | | | | | | | |
| White | 57 | 75.4 | 5.3 | 10.5 | 29.8 | 29.8 | 24.6 |
| African American | 104 | 68.7 | 0.0 | 1.9 | 14.4 | 32.7 | 51.0 |
| Hispanic | 2 | 69.5 | 0.0 | 0.0 | 0.0 | 50.0 | 50.0 |
| Asian/Hawaiian-Pac. Islander | 2 | 78.5 | 0.0 | 0.0 | 100.0 | 0.0 | 0.0 |
| Other | 3 | 64.7 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Unknown | 1 | 74.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 |
| Language | | | | | | | |
| English speaker | 146 | 70.9 | 1.4 | 4.8 | 20.5 | 30.8 | 42.5 |
| LEP mainstream | 1 | 83.0 | 0.0 | 0.0 | 100.0 | 0.0 | 0.0 |
| Waiver | 1 | 64.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Other | 21 | 71.8 | 4.8 | 4.8 | 14.3 | 38.1 | 38.1 |
| Lunch | | | | | | | |
| Free meals | 45 | 71.9 | 0.0 | 8.9 | 20.0 | 37.8 | 33.3 |
| Reduced-price meals | 5 | 75.0 | 0.0 | 0.0 | 40.0 | 40.0 | 20.0 |
| No free/reduced-price meals | 77 | 71.1 | 2.6 | 2.6 | 22.1 | 27.3 | 45.5 |
| Unknown | 42 | 69.5 | 2.4 | 4.8 | 14.3 | 31.0 | 47.6 |
| IEP | | | | | | | |
| Yes | 9 | 64.2 | 0.0 | 0.0 | 0.0 | 33.3 | 66.7 |
| No | 98 | 73.3 | 3.1 | 7.1 | 23.5 | 34.7 | 31.6 |
| Unknown | 62 | 68.4 | 0.0 | 1.6 | 17.7 | 25.8 | 54.8 |
| Migrant | | | | | | | |
| Yes | 1 | 68.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| No | 118 | 71.5 | 1.7 | 5.9 | 19.5 | 33.9 | 39.0 |
| Unknown | 50 | 70.0 | 2.0 | 2.0 | 22.0 | 26.0 | 48.0 |
| Courses taken | | | | | | | |
| 3142 (Math Tech 2) | 76 | 68.6 | 1.3 | 3.9 | 11.8 | 30.3 | 52.6 |
| 4111 (Alg 1) | 68 | 73.4 | 2.9 | 4.4 | 27.9 | 33.8 | 30.9 |
| Other | 25 | 71.9 | 0.0 | 8.0 | 24.0 | 28.0 | 40.0 |

TABLE 5.2

**Algebra 1/ Mathematics for the Technologies 2 EOCEP Test, Adult Education Programs:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Subgroups**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|---------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Gifted/talented | | | | | | | |
| Academic | 5 | 74.6 | 0.0 | 0.0 | 60.0 | 0.0 | 40.0 |
| Artistic | 3 | 64.0 | 0.0 | 0.0 | 0.0 | 33.3 | 66.7 |
| No | 120 | 71.8 | 1.7 | 5.0 | 21.7 | 33.3 | 38.3 |
| Unknown | 41 | 69.0 | 2.4 | 4.9 | 12.2 | 29.3 | 51.2 |
| 504 plan | | | | | | | |
| Yes | 1 | 80.0 | 0.0 | 0.0 | 100.0 | 0.0 | 0.0 |
| No | 122 | 71.8 | 2.5 | 6.6 | 18.0 | 34.4 | 38.5 |
| Unknown | 46 | 68.9 | 0.0 | 0.0 | 23.9 | 23.9 | 52.2 |
| Alternative school | | | | | | | |
| Yes | 73 | 72.3 | 1.4 | 6.8 | 21.9 | 35.6 | 34.2 |
| No | 44 | 70.0 | 2.3 | 4.5 | 13.6 | 29.5 | 50.0 |
| Unknown | 52 | 70.2 | 1.9 | 1.9 | 23.1 | 26.9 | 46.2 |

TABLE 5.3

**English 1 EOCEP Test, Regular Schools:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|------------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Overall | 55,368 | 75.4 | 8.3 | 17.1 | 20.8 | 22.0 | 31.7 |
| Gender | | | | | | | |
| Female | 27,170 | 76.6 | 9.4 | 18.2 | 21.8 | 22.7 | 27.9 |
| Male | 27,931 | 74.3 | 7.2 | 16.1 | 19.9 | 21.4 | 35.3 |
| Unknown | 267 | 73.6 | 7.9 | 15.7 | 19.9 | 19.5 | 37.1 |
| Grade | | | | | | | |
| 7 | 2 | 77.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 |
| 8 | 5,986 | 86.8 | 25.6 | 39.0 | 22.8 | 9.7 | 2.9 |
| 9 | 48,052 | 74.3 | 6.4 | 14.7 | 20.8 | 23.7 | 34.3 |
| 10 | 974 | 65.6 | 1.1 | 4.9 | 12.0 | 18.1 | 63.9 |
| 11 | 202 | 65.5 | 2.5 | 4.0 | 12.4 | 16.3 | 64.9 |
| 12 | 29 | 64.8 | 0.0 | 6.9 | 17.2 | 10.3 | 65.5 |
| Other | 123 | 64.9 | 0.8 | 2.4 | 8.9 | 21.1 | 66.7 |
| Ethnicity | | | | | | | |
| White | 30,032 | 79.7 | 13.3 | 24.3 | 24.4 | 19.2 | 18.8 |
| African American | 22,064 | 70.0 | 1.7 | 7.8 | 16.6 | 26.2 | 47.7 |
| Hispanic | 1,662 | 70.1 | 4.3 | 10.7 | 15.8 | 20.3 | 48.9 |
| Asian/Hawaiian-Pac. Islander | 608 | 79.2 | 15.8 | 24.0 | 20.4 | 16.1 | 23.7 |
| American Indian | 134 | 74.5 | 6.0 | 20.9 | 14.9 | 28.4 | 29.9 |
| Other | 618 | 73.7 | 7.3 | 16.7 | 18.4 | 20.2 | 37.4 |
| Unknown | 250 | 70.9 | 4.0 | 11.6 | 18.0 | 21.6 | 44.8 |
| Language | | | | | | | |
| English speaker | 52,506 | 75.8 | 8.6 | 17.6 | 21.2 | 22.2 | 30.4 |
| Exited | 358 | 76.9 | 9.5 | 19.6 | 22.6 | 22.1 | 26.3 |
| LEP mainstream | 192 | 68.3 | 2.6 | 7.8 | 16.1 | 16.1 | 57.3 |
| Full LEP | 637 | 61.5 | 0.2 | 1.6 | 7.1 | 12.9 | 78.3 |
| Waiver | 44 | 66.7 | 6.8 | 6.8 | 13.6 | 9.1 | 63.6 |
| Other | 1,631 | 69.1 | 2.7 | 9.0 | 14.8 | 20.4 | 53.0 |
| Lunch | | | | | | | |
| Free meals | 21,037 | 70.1 | 1.8 | 8.3 | 16.9 | 25.6 | 47.4 |
| Reduced-price meals | 3,939 | 74.3 | 5.1 | 14.1 | 22.4 | 26.0 | 32.4 |
| No free/reduced-price meals | 28,881 | 79.8 | 13.8 | 24.5 | 23.9 | 18.9 | 19.0 |
| Unknown | 1,511 | 68.6 | 2.4 | 8.3 | 13.8 | 22.0 | 53.5 |
| IEP | | | | | | | |
| Yes | 5,595 | 64.4 | 0.9 | 3.1 | 9.8 | 16.8 | 69.5 |
| No | 5,754 | 72.4 | 4.3 | 11.4 | 19.5 | 24.7 | 40.0 |
| Unknown | 44,019 | 77.2 | 9.8 | 19.7 | 22.4 | 22.4 | 25.8 |
| Migrant | | | | | | | |
| Yes | 89 | 63.7 | 1.1 | 4.5 | 5.6 | 12.4 | 76.4 |
| No | 9,144 | 70.0 | 3.6 | 9.7 | 16.4 | 21.4 | 48.9 |
| Unknown | 46,135 | 76.5 | 9.3 | 18.6 | 21.8 | 22.2 | 28.2 |

TABLE 5.3

**English 1 EOCEP Test, Regular Schools:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|----------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Courses taken | | | | | | | |
| 2011 (Eng 1, grade 7 or 8) | 3,752 | 86.3 | 23.6 | 38.8 | 23.7 | 10.5 | 3.4 |
| 3011 (Eng 1) | 50,330 | 74.7 | 7.2 | 15.6 | 20.7 | 23.0 | 33.5 |
| Other | 1,286 | 71.9 | 5.7 | 13.9 | 17.7 | 20.1 | 42.6 |
| Gifted/talented | | | | | | | |
| Academic | 6,942 | 89.0 | 33.8 | 40.1 | 19.6 | 5.0 | 1.5 |
| Artistic | 264 | 81.2 | 14.8 | 24.6 | 26.9 | 20.5 | 13.3 |
| Both academic and artistic | 250 | 91.6 | 46.4 | 41.6 | 8.4 | 2.4 | 1.2 |
| No | 46,477 | 73.5 | 4.4 | 13.8 | 21.3 | 24.8 | 35.8 |
| Unknown | 1,435 | 68.8 | 2.6 | 8.9 | 14.7 | 19.9 | 53.9 |
| 504 plan | | | | | | | |
| Yes | 513 | 76.1 | 9.0 | 18.1 | 20.9 | 22.2 | 29.8 |
| No | 52,918 | 75.6 | 8.4 | 17.4 | 21.1 | 22.1 | 31.0 |
| Unknown | 1,937 | 69.8 | 4.4 | 9.4 | 14.5 | 20.1 | 51.5 |
| Alternative school | | | | | | | |
| Yes | 1,031 | 65.6 | 0.8 | 3.5 | 9.1 | 22.3 | 64.3 |
| No | 10,222 | 71.6 | 5.3 | 11.8 | 17.3 | 21.4 | 44.2 |
| Unknown | 44,115 | 76.6 | 9.2 | 18.7 | 21.9 | 22.2 | 28.0 |

TABLE 5.4

**English 1 EOCEP Test, Adult Education Programs:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|------------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Overall | 158 | 65.1 | 1.3 | 3.2 | 13.3 | 19.0 | 63.3 |
| Gender | | | | | | | |
| Female | 59 | 67.6 | 3.4 | 1.7 | 11.9 | 25.4 | 57.6 |
| Male | 96 | 63.5 | 0.0 | 4.2 | 14.6 | 14.6 | 66.7 |
| Unknown | 3 | 66.7 | 0.0 | 0.0 | 0.0 | 33.3 | 66.7 |
| Grade | | | | | | | |
| 9 | 134 | 64.3 | 0.0 | 3.0 | 11.9 | 20.1 | 64.9 |
| 10 | 6 | 60.8 | 0.0 | 0.0 | 16.7 | 0.0 | 83.3 |
| 11 | 1 | 72.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 |
| 12 | 5 | 84.0 | 40.0 | 0.0 | 40.0 | 0.0 | 20.0 |
| Other | 12 | 67.3 | 0.0 | 8.3 | 16.7 | 16.7 | 58.3 |
| Ethnicity | | | | | | | |
| White | 52 | 67.8 | 3.8 | 3.8 | 21.2 | 11.5 | 59.6 |
| African American | 90 | 62.9 | 0.0 | 2.2 | 8.9 | 21.1 | 67.8 |
| Hispanic | 5 | 67.6 | 0.0 | 20.0 | 20.0 | 20.0 | 40.0 |
| Asian/Hawaiian-Pac. Islander | 4 | 73.3 | 0.0 | 0.0 | 0.0 | 75.0 | 25.0 |
| American Indian | 1 | 62.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Other | 4 | 63.5 | 0.0 | 0.0 | 25.0 | 0.0 | 75.0 |
| Unknown | 2 | 71.5 | 0.0 | 0.0 | 0.0 | 50.0 | 50.0 |
| Language | | | | | | | |
| English speaker | 151 | 64.9 | 0.7 | 3.3 | 13.9 | 18.5 | 63.6 |
| Full LEP | 1 | 52.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Other | 6 | 72.2 | 16.7 | 0.0 | 0.0 | 33.3 | 50.0 |
| Lunch | | | | | | | |
| Free meals | 97 | 62.7 | 0.0 | 2.1 | 10.3 | 16.5 | 71.1 |
| Reduced-price meals | 4 | 69.5 | 0.0 | 0.0 | 25.0 | 50.0 | 25.0 |
| No free/reduced-price meals | 44 | 68.0 | 2.3 | 4.5 | 18.2 | 22.7 | 52.3 |
| Unknown | 13 | 71.2 | 7.7 | 7.7 | 15.4 | 15.4 | 53.8 |
| IEP | | | | | | | |
| Yes | 19 | 59.4 | 0.0 | 0.0 | 0.0 | 10.5 | 89.5 |
| No | 100 | 65.4 | 1.0 | 4.0 | 14.0 | 19.0 | 62.0 |
| Unknown | 39 | 67.0 | 2.6 | 2.6 | 17.9 | 23.1 | 53.8 |
| Migrant | | | | | | | |
| Yes | 1 | 73.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 |
| No | 146 | 64.5 | 0.7 | 3.4 | 13.0 | 17.8 | 65.1 |
| Unknown | 11 | 71.5 | 9.1 | 0.0 | 18.2 | 27.3 | 45.5 |
| Courses taken | | | | | | | |
| 3011 (Eng 1) | 148 | 65.4 | 1.4 | 3.4 | 13.5 | 19.6 | 62.2 |
| Other | 10 | 59.6 | 0.0 | 0.0 | 10.0 | 10.0 | 80.0 |

TABLE 5.4**English 1 EOCEP Test, Adult Education Programs:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|---------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Gifted/talented | | | | | | | |
| Academic | 2 | 77.0 | 0.0 | 0.0 | 50.0 | 50.0 | 0.0 |
| No | 143 | 64.3 | 0.7 | 2.8 | 12.6 | 18.9 | 65.0 |
| Unknown | 13 | 71.2 | 7.7 | 7.7 | 15.4 | 15.4 | 53.8 |
| 504 plan | | | | | | | |
| Yes | 1 | 69.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| No | 148 | 64.6 | 0.7 | 3.4 | 12.8 | 18.9 | 64.2 |
| Unknown | 9 | 71.7 | 11.1 | 0.0 | 22.2 | 22.2 | 44.4 |
| Alternative school | | | | | | | |
| Yes | 126 | 63.5 | 0.0 | 1.6 | 11.9 | 18.3 | 68.3 |
| No | 19 | 73.2 | 5.3 | 15.8 | 21.1 | 21.1 | 36.8 |
| Unknown | 13 | 68.0 | 7.7 | 0.0 | 15.4 | 23.1 | 53.8 |

TABLE 5.5

**Biology 1/Applied Biology 2 EOCEP Test, Regular Schools:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|------------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Overall | 38,491 | 72.8 | 4.8 | 9.3 | 18.8 | 28.9 | 38.3 |
| Gender | | | | | | | |
| Female | 20,400 | 72.0 | 3.6 | 7.9 | 17.5 | 29.9 | 41.1 |
| Male | 17,972 | 73.8 | 6.1 | 10.8 | 20.3 | 27.8 | 35.0 |
| Unknown | 119 | 67.0 | 1.7 | 8.4 | 7.6 | 21.8 | 60.5 |
| Grade | | | | | | | |
| 7 | 1 | 57.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| 8 | — | — | — | — | — | — | — |
| 9 | 8,050 | 73.1 | 6.6 | 10.6 | 19.3 | 24.2 | 39.3 |
| 10 | 24,831 | 73.7 | 5.0 | 10.1 | 20.2 | 30.9 | 33.8 |
| 11 | 4,077 | 68.4 | 1.3 | 4.0 | 11.6 | 26.8 | 56.2 |
| 12 | 1,476 | 67.9 | 0.7 | 2.8 | 11.3 | 26.5 | 58.7 |
| Other | 56 | 68.2 | 3.6 | 7.1 | 16.1 | 14.3 | 58.9 |
| Ethnicity | | | | | | | |
| White | 22,640 | 76.1 | 7.1 | 12.9 | 24.3 | 31.1 | 24.6 |
| African American | 13,860 | 67.5 | 0.9 | 3.2 | 10.1 | 25.5 | 60.4 |
| Hispanic | 949 | 70.1 | 2.6 | 7.6 | 13.8 | 29.1 | 46.9 |
| Asian/Hawaiian-Pac. Islander | 519 | 78.0 | 12.1 | 17.9 | 21.6 | 25.4 | 22.9 |
| American Indian | 64 | 71.9 | 1.6 | 6.3 | 17.2 | 35.9 | 39.1 |
| Other | 347 | 71.8 | 4.3 | 10.1 | 15.3 | 29.7 | 40.6 |
| Unknown | 112 | 66.9 | 2.7 | 8.0 | 8.9 | 17.9 | 62.5 |
| Language | | | | | | | |
| English speaker | 37,089 | 73.0 | 4.9 | 9.4 | 19.0 | 29.1 | 37.6 |
| Exited | 234 | 72.8 | 5.1 | 11.5 | 13.2 | 29.9 | 40.2 |
| LEP mainstream | 118 | 69.2 | 2.5 | 4.2 | 14.4 | 26.3 | 52.5 |
| Full LEP | 236 | 63.1 | 0.4 | 0.8 | 5.5 | 18.2 | 75.0 |
| Waiver | 33 | 72.3 | 3.0 | 15.2 | 18.2 | 27.3 | 36.4 |
| Other | 781 | 68.5 | 1.8 | 5.8 | 13.4 | 22.7 | 56.3 |
| Lunch | | | | | | | |
| Free meals | 11,126 | 68.0 | 1.1 | 3.8 | 10.6 | 26.5 | 58.0 |
| Reduced-price meals | 2,425 | 71.4 | 2.2 | 7.4 | 17.4 | 30.3 | 42.7 |
| No free/reduced-price meals | 24,274 | 75.3 | 6.8 | 12.1 | 22.8 | 30.0 | 28.3 |
| Unknown | 666 | 67.5 | 0.9 | 5.7 | 11.7 | 23.4 | 58.3 |
| IEP | | | | | | | |
| Yes | 2,006 | 65.4 | 0.8 | 3.0 | 8.6 | 18.4 | 69.1 |
| No | 3,750 | 71.1 | 2.9 | 7.6 | 17.4 | 28.7 | 43.5 |
| Unknown | 32,735 | 73.5 | 5.2 | 9.9 | 19.5 | 29.6 | 35.8 |
| Migrant | | | | | | | |
| Yes | 40 | 65.7 | 0.0 | 5.0 | 7.5 | 30.0 | 57.5 |
| No | 5,574 | 70.4 | 3.0 | 7.1 | 16.4 | 25.9 | 47.6 |
| Unknown | 32,877 | 73.2 | 5.1 | 9.7 | 19.2 | 29.4 | 36.7 |

TABLE 5.5**Biology 1/Applied Biology 2 EOCEP Test, Regular Schools:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|----------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Courses taken | | | | | | | |
| 3221 (Bio 1) | 33,167 | 73.7 | 5.4 | 10.4 | 20.3 | 29.4 | 34.6 |
| 3227 (App Bio 2) | 4,598 | 66.7 | 0.2 | 1.8 | 8.5 | 26.0 | 63.4 |
| Other | 726 | 69.8 | 3.9 | 5.5 | 15.3 | 25.2 | 50.1 |
| Gifted/talented | | | | | | | |
| Academic | 3,714 | 83.0 | 17.9 | 24.0 | 30.7 | 20.7 | 6.6 |
| Artistic | 252 | 74.0 | 4.4 | 11.1 | 22.6 | 27.4 | 34.5 |
| Both academic and artistic | 102 | 85.1 | 27.5 | 18.6 | 33.3 | 17.6 | 2.9 |
| No | 33,779 | 71.7 | 3.3 | 7.7 | 17.5 | 30.0 | 41.6 |
| Unknown | 644 | 67.8 | 1.2 | 6.1 | 13.4 | 21.4 | 57.9 |
| 504 plan | | | | | | | |
| Yes | 370 | 72.9 | 5.7 | 7.8 | 20.0 | 29.5 | 37.0 |
| No | 37,339 | 72.9 | 4.8 | 9.3 | 18.8 | 29.0 | 38.1 |
| Unknown | 782 | 70.2 | 3.6 | 9.8 | 15.6 | 21.2 | 49.7 |
| Alternative school | | | | | | | |
| Yes | 290 | 63.3 | 0.3 | 0.3 | 4.5 | 17.2 | 77.6 |
| No | 6,408 | 70.8 | 3.2 | 7.2 | 17.3 | 26.5 | 45.8 |
| Unknown | 31,793 | 73.3 | 5.1 | 9.8 | 19.2 | 29.5 | 36.4 |

TABLE 5.6
Biology 1/Applied Biology 2 EOCEP Test, Adult Education Programs:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|-----------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Overall | 140 | 62.7 | 0.0 | 0.0 | 3.6 | 17.9 | 78.6 |
| Gender | | | | | | | |
| Female | 53 | 62.0 | 0.0 | 0.0 | 5.7 | 9.4 | 84.9 |
| Male | 85 | 63.3 | 0.0 | 0.0 | 2.4 | 23.5 | 74.1 |
| Unknown | 2 | 59.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Grade | | | | | | | |
| 9 | 24 | 60.1 | 0.0 | 0.0 | 4.2 | 16.7 | 79.2 |
| 10 | 42 | 62.6 | 0.0 | 0.0 | 0.0 | 26.2 | 73.8 |
| 11 | 10 | 60.9 | 0.0 | 0.0 | 20.0 | 0.0 | 80.0 |
| 12 | 29 | 63.6 | 0.0 | 0.0 | 3.4 | 13.8 | 82.8 |
| Other | 35 | 64.5 | 0.0 | 0.0 | 2.9 | 17.1 | 80.0 |
| Ethnicity | | | | | | | |
| White | 42 | 64.7 | 0.0 | 0.0 | 7.1 | 35.7 | 57.1 |
| African American | 87 | 61.6 | 0.0 | 0.0 | 1.1 | 10.3 | 88.5 |
| Hispanic | 3 | 71.7 | 0.0 | 0.0 | 33.3 | 33.3 | 33.3 |
| Other | 5 | 62.6 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Unknown | 3 | 60.7 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Language | | | | | | | |
| English speaker | 122 | 62.6 | 0.0 | 0.0 | 4.1 | 18.0 | 77.9 |
| Other | 18 | 63.7 | 0.0 | 0.0 | 0.0 | 16.7 | 83.3 |
| Lunch | | | | | | | |
| Free meals | 40 | 59.5 | 0.0 | 0.0 | 0.0 | 17.5 | 82.5 |
| Reduced-price meals | 6 | 66.7 | 0.0 | 0.0 | 0.0 | 33.3 | 66.7 |
| No free/reduced-price meals | 70 | 64.0 | 0.0 | 0.0 | 7.1 | 18.6 | 74.3 |
| Unknown | 24 | 63.5 | 0.0 | 0.0 | 0.0 | 12.5 | 87.5 |
| IEP | | | | | | | |
| Yes | 7 | 57.9 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| No | 93 | 62.9 | 0.0 | 0.0 | 4.3 | 22.6 | 73.1 |
| Unknown | 40 | 63.2 | 0.0 | 0.0 | 2.5 | 10.0 | 87.5 |
| Migrant | | | | | | | |
| No | 111 | 62.9 | 0.0 | 0.0 | 4.5 | 21.6 | 73.9 |
| Unknown | 29 | 62.1 | 0.0 | 0.0 | 0.0 | 3.4 | 96.6 |
| Courses taken | | | | | | | |
| 3221 (Bio 1) | 97 | 62.4 | 0.0 | 0.0 | 4.1 | 17.5 | 78.4 |
| 3227 (App Bio 2) | 8 | 63.4 | 0.0 | 0.0 | 12.5 | 0.0 | 87.5 |
| Other | 35 | 63.5 | 0.0 | 0.0 | 0.0 | 22.9 | 77.1 |
| Gifted/talented | | | | | | | |
| Academic | 3 | 61.0 | 0.0 | 0.0 | 0.0 | 33.3 | 66.7 |
| Artistic | — | — | — | — | — | — | — |
| Both academic and artistic | 1 | 62.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| No | 111 | 62.6 | 0.0 | 0.0 | 4.5 | 18.9 | 76.6 |
| Unknown | 25 | 63.7 | 0.0 | 0.0 | 0.0 | 12.0 | 88.0 |

TABLE 5.6
Biology 1/Applied Biology 2 EOCEP Test, Adult Education Programs:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|---------------------------|-----|---------------------|-----|-----|------|------|------|
| 504 plan | | | | | | | |
| Yes | — | — | — | — | — | — | — |
| No | 111 | 63.2 | 0.0 | 0.0 | 4.5 | 21.6 | 73.9 |
| Unknown | 29 | 61.1 | 0.0 | 0.0 | 0.0 | 3.4 | 96.6 |
| Alternative school | | | | | | | |
| Yes | 72 | 61.6 | 0.0 | 0.0 | 2.8 | 20.8 | 76.4 |
| No | 30 | 66.0 | 0.0 | 0.0 | 10.0 | 23.3 | 66.7 |
| Unknown | 38 | 62.3 | 0.0 | 0.0 | 0.0 | 7.9 | 92.1 |

TABLE 5.7

**Physical Science EOCEP Test, Regular Schools:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|------------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Overall | 49,313 | 67.3 | 3.7 | 6.7 | 11.3 | 19.0 | 59.4 |
| Gender | | | | | | | |
| Female | 24,418 | 66.7 | 2.9 | 5.5 | 10.5 | 19.3 | 61.8 |
| Male | 24,724 | 68.0 | 4.5 | 7.8 | 12.1 | 18.7 | 56.9 |
| Unknown | 171 | 62.4 | 1.2 | 3.5 | 2.3 | 17.0 | 76.0 |
| Grade | | | | | | | |
| 7 | 1 | 98.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8 | 285 | 78.5 | 11.6 | 22.5 | 22.8 | 22.5 | 20.7 |
| 9 | 41,146 | 67.5 | 3.9 | 6.9 | 11.5 | 19.2 | 58.6 |
| 10 | 6,364 | 66.4 | 2.6 | 5.6 | 10.4 | 18.1 | 63.3 |
| 11 | 1,107 | 64.3 | 1.5 | 3.8 | 6.8 | 16.6 | 71.3 |
| 12 | 351 | 64.4 | 1.7 | 2.3 | 5.7 | 18.2 | 72.1 |
| Other | 59 | 60.0 | 0.0 | 5.1 | 6.8 | 5.1 | 83.1 |
| Ethnicity | | | | | | | |
| White | 26,301 | 71.5 | 5.9 | 10.4 | 16.0 | 22.9 | 44.8 |
| African American | 20,408 | 62.0 | 0.6 | 2.1 | 5.3 | 14.1 | 77.9 |
| Hispanic | 1,353 | 63.8 | 1.6 | 3.4 | 7.7 | 15.6 | 71.7 |
| Asian/Hawaiian-Pac. Islander | 493 | 75.5 | 16.2 | 12.4 | 15.8 | 18.7 | 36.9 |
| American Indian | 101 | 67.7 | 4.0 | 6.9 | 9.9 | 20.8 | 58.4 |
| Other | 522 | 67.8 | 2.9 | 6.7 | 13.4 | 21.1 | 55.9 |
| Unknown | 135 | 62.1 | 1.5 | 3.0 | 3.0 | 18.5 | 74.1 |
| Language | | | | | | | |
| English speaker | 47,116 | 67.5 | 3.8 | 6.8 | 11.5 | 19.3 | 58.7 |
| Exited | 230 | 68.5 | 6.1 | 7.4 | 11.7 | 17.0 | 57.8 |
| LEP mainstream | 182 | 65.2 | 3.3 | 3.3 | 12.6 | 13.7 | 67.0 |
| Full LEP | 506 | 60.0 | 1.0 | 1.0 | 3.2 | 11.1 | 83.8 |
| Waiver | 41 | 64.3 | 4.9 | 2.4 | 17.1 | 4.9 | 70.7 |
| Other | 1,238 | 62.9 | 0.9 | 3.4 | 7.1 | 13.6 | 75.0 |
| Lunch | | | | | | | |
| Free meals | 19,196 | 62.4 | 0.8 | 2.3 | 5.5 | 14.8 | 76.6 |
| Reduced-price meals | 3,569 | 66.0 | 1.7 | 4.2 | 10.7 | 19.3 | 64.1 |
| No free/reduced-price meals | 25,319 | 71.5 | 6.3 | 10.5 | 15.9 | 22.4 | 44.9 |
| Unknown | 1,229 | 62.7 | 1.2 | 3.5 | 6.5 | 13.9 | 74.9 |
| IEP | | | | | | | |
| Yes | 4,885 | 59.5 | 0.5 | 1.4 | 3.4 | 9.4 | 85.3 |
| No | 5,541 | 66.6 | 3.0 | 5.8 | 10.6 | 18.3 | 62.3 |
| Unknown | 38,887 | 68.4 | 4.2 | 7.5 | 12.4 | 20.3 | 55.7 |
| Migrant | | | | | | | |
| Yes | 67 | 60.3 | 1.5 | 3.0 | 7.5 | 6.0 | 82.1 |
| Nor | 8,684 | 64.8 | 2.4 | 4.5 | 8.8 | 16.1 | 68.2 |
| Unknown | 40,562 | 67.9 | 3.9 | 7.1 | 11.8 | 19.6 | 57.5 |

TABLE 5.7
Physical Science EOCEP Test, Regular Schools:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|------------------------------|--------|---------------------|------|------|------|------|------|
| Courses taken | | | | | | | |
| 2211 (Phy Sci, grade 7 or 8) | 301 | 79.0 | 11.6 | 23.9 | 22.6 | 21.6 | 20.3 |
| 3211 (Phy Sci) | 48,076 | 67.3 | 3.6 | 6.6 | 11.2 | 19.0 | 59.5 |
| Other | 936 | 64.4 | 2.5 | 5.0 | 9.0 | 14.9 | 68.7 |
| Gifted/talented | | | | | | | |
| Academic | 4,144 | 83.0 | 20.3 | 25.5 | 25.1 | 19.4 | 9.7 |
| Artistic | 254 | 72.4 | 7.1 | 9.1 | 14.6 | 28.3 | 40.9 |
| Both academic and artistic | 81 | 83.8 | 19.8 | 19.8 | 44.4 | 8.6 | 7.4 |
| No | 43,583 | 65.9 | 2.1 | 5.0 | 10.0 | 19.0 | 63.9 |
| Unknown | 1,251 | 62.8 | 1.2 | 3.1 | 6.7 | 14.4 | 74.6 |
| 504 plan | | | | | | | |
| Yes | 465 | 68.2 | 4.1 | 7.3 | 14.8 | 18.5 | 55.3 |
| No | 47,412 | 67.5 | 3.7 | 6.8 | 11.4 | 19.1 | 59.0 |
| Unknown | 1,436 | 62.9 | 1.1 | 3.5 | 6.5 | 13.6 | 75.3 |
| Alternative school | | | | | | | |
| Yes | 750 | 58.2 | 0.4 | 0.5 | 1.7 | 8.3 | 89.1 |
| No | 9,453 | 65.5 | 2.6 | 5.0 | 9.6 | 16.8 | 65.9 |
| Unknown | 39,110 | 68.0 | 4.0 | 7.2 | 11.9 | 19.7 | 57.2 |

TABLE 5.8

**Physical Science EOCEP Test, Adult Education Programs:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|------------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| Overall | 139 | 57.8 | 0.0 | 0.7 | 2.2 | 8.6 | 88.5 |
| Gender | | | | | | | |
| Female | 59 | 58.2 | 0.0 | 0.0 | 0.0 | 11.9 | 88.1 |
| Male | 79 | 57.5 | 0.0 | 1.3 | 3.8 | 6.3 | 88.6 |
| Unknown | 1 | 59.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Grade | | | | | | | |
| 9 | 71 | 55.3 | 0.0 | 0.0 | 0.0 | 5.6 | 94.4 |
| 10 | 23 | 58.3 | 0.0 | 0.0 | 4.3 | 8.7 | 87.0 |
| 11 | 6 | 58.8 | 0.0 | 0.0 | 0.0 | 16.7 | 83.3 |
| 12 | 15 | 62.1 | 0.0 | 6.7 | 0.0 | 6.7 | 86.7 |
| Other | 24 | 61.8 | 0.0 | 0.0 | 8.3 | 16.7 | 75.0 |
| Ethnicity | | | | | | | |
| White | 47 | 58.9 | 0.0 | 0.0 | 4.3 | 21.3 | 74.5 |
| African American | 84 | 57.0 | 0.0 | 1.2 | 1.2 | 2.4 | 95.2 |
| Hispanic | 3 | 54.7 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Asian/Hawaiian-Pac. Islander | 1 | 63.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Other | 4 | 61.3 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Language | | | | | | | |
| English speaker | 130 | 57.8 | 0.0 | 0.8 | 2.3 | 9.2 | 87.7 |
| Full LEP | 1 | 51.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Other | 8 | 58.3 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Lunch | | | | | | | |
| Free meals | 79 | 55.9 | 0.0 | 0.0 | 1.3 | 5.1 | 93.7 |
| Reduced-price meals | 5 | 63.6 | 0.0 | 0.0 | 0.0 | 20.0 | 80.0 |
| No free/reduced-price meals | 40 | 59.4 | 0.0 | 2.5 | 2.5 | 15.0 | 80.0 |
| Unknown | 15 | 61.5 | 0.0 | 0.0 | 6.7 | 6.7 | 86.7 |
| IEP | | | | | | | |
| Yes | 19 | 52.5 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| No | 93 | 57.8 | 0.0 | 1.1 | 1.1 | 8.6 | 89.2 |
| Unknown | 27 | 61.4 | 0.0 | 0.0 | 7.4 | 14.8 | 77.8 |
| Migrant | | | | | | | |
| Yes | 1 | 67.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| No | 120 | 57.8 | 0.0 | 0.8 | 2.5 | 9.2 | 87.5 |
| Unknown | 18 | 57.1 | 0.0 | 0.0 | 0.0 | 5.6 | 94.4 |
| Courses taken | | | | | | | |
| 3211 (Phy Sci) | 114 | 57.5 | 0.0 | 0.9 | 1.8 | 9.6 | 87.7 |
| Other | 25 | 59.0 | 0.0 | 0.0 | 4.0 | 4.0 | 92.0 |
| Gifted/talented | | | | | | | |
| Academic | 3 | 60.3 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| Both academic and artistic | 1 | 54.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| No | 121 | 57.3 | 0.0 | 0.8 | 1.7 | 9.1 | 88.4 |
| Unknown | 14 | 61.9 | 0.0 | 0.0 | 7.1 | 7.1 | 85.7 |

TABLE 5.8**Physical Science EOCEP Test, Adult Education Programs:
Percentages of Student Scores in Letter-Grade Equivalents, Overall and by Demographics**

| Demographics | N | Mean Scale Score | A | B | C | D | F |
|---------------------------|----------|-----------------------------|----------|----------|----------|----------|----------|
| 504 plan | | | | | | | |
| Yes | 1 | 51.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| No | 119 | 57.9 | 0.0 | 0.8 | 2.5 | 9.2 | 87.4 |
| Unknown | 19 | 57.4 | 0.0 | 0.0 | 0.0 | 5.3 | 94.7 |
| Alternative school | | | | | | | |
| Yes | 100 | 56.3 | 0.0 | 0.0 | 1.0 | 8.0 | 91.0 |
| No | 19 | 66.1 | 0.0 | 5.3 | 10.5 | 15.8 | 68.4 |
| Unknown | 20 | 57.3 | 0.0 | 0.0 | 0.0 | 5.0 | 95.0 |

CHAPTER 6

DESCRIPTIVE STATISTICS

Descriptive statistics of scale score distributions for the three 2004–05 test administrations combined are presented in table 6 for students overall and by gender and race.

TABLE 6
2004–05 EOCEP Test Administration Summary Statistics:
Regular Schools and Adult Education Programs, Overall and by Gender and Race

| Algebra 1/Mathematics for the Technologies 2 | | | | | | | |
|-----------------------------------------------------|----------|--------------------|-----------|---------------------------------|----------|--------------------|-----------|
| Regular Schools | | | | Adult Education Programs | | | |
| | N | Scale Score | | | N | Scale Score | |
| | | Mean | SD | | | Mean | SD |
| Overall | 58,019 | 79.9 | 11.6 | Overall | 169 | 71.0 | 9.0 |
| Gender | | | | Gender | | | |
| Males | 28,514 | 79.8 | 11.9 | Males | 92 | 70.9 | 9.0 |
| Females | 29,300 | 80.1 | 11.3 | Females | 76 | 71.2 | 9.0 |
| Ethnicity | | | | Ethnicity | | | |
| Whites | 31,737 | 83.5 | 11.2 | Whites | 57 | 75.4 | 9.5 |
| African Americans | 23,048 | 75.0 | 10.3 | African Americans | 104 | 68.7 | 8.0 |
| English 1 | | | | | | | |
| Regular Schools | | | | Adult Education Programs | | | |
| | N | Scale Score | | | N | Scale Score | |
| | | Mean | SD | | | Mean | SD |
| Overall | 55,368 | 75.4 | 12.5 | Overall | 158 | 65.1 | 11.8 |
| Gender | | | | Gender | | | |
| Males | 27,931 | 74.3 | 12.8 | Males | 96 | 63.5 | 12.0 |
| Females | 27,170 | 76.6 | 12.0 | Females | 59 | 67.6 | 11.2 |
| Ethnicity | | | | Ethnicity | | | |
| Whites | 30,032 | 79.7 | 11.8 | Whites | 52 | 67.8 | 12.6 |
| African Americans | 22,064 | 79.0 | 10.9 | African Americans | 90 | 62.9 | 11.0 |
| Biology 1/Applied Biology 2 | | | | | | | |
| Regular Schools | | | | Adult Education Programs | | | |
| | N | Scale Score | | | N | Scale Score | |
| | | Mean | SD | | | Mean | SD |
| Overall | 38,491 | 72.8 | 10.7 | Overall | 140 | 62.7 | 7.9 |
| Gender | | | | Gender | | | |
| Males | 17,972 | 73.8 | 11.2 | Males | 85 | 63.3 | 8.1 |
| Females | 20,400 | 72.0 | 10.1 | Females | 53 | 62.0 | 7.4 |
| Ethnicity | | | | Ethnicity | | | |
| Whites | 22,640 | 76.1 | 10.2 | Whites | 42 | 64.7 | 9.5 |
| African Americans | 13,860 | 67.5 | 9.0 | African Americans | 87 | 61.6 | 6.7 |

TABLE 6
2004–05 EOCEP Test Administration Summary Statistics:
Regular Schools and Adult Education Programs, Overall and by Gender and Race

| Physical Science | | | | | | | |
|-------------------------|----------|--------------------|-----------|---------------------------------|----------|--------------------|-----------|
| Regular Schools | | | | Adult Education Programs | | | |
| | N | Scale Score | | | N | Scale Score | |
| | | Mean | SD | | | Mean | SD |
| Overall | 49,313 | 67.3 | 12.6 | Overall | 139 | 57.8 | 9.3 |
| Gender | | | | Gender | | | |
| Males | 24,724 | 68.0 | 13.2 | Males | 79 | 57.5 | 9.8 |
| Females | 24,418 | 66.7 | 11.9 | Females | 59 | 58.2 | 8.6 |
| Ethnicity | | | | Ethnicity | | | |
| Whites | 26,301 | 71.5 | 12.6 | Whites | 47 | 58.9 | 11.7 |
| African Americans | 20,408 | 62.0 | 10.3 | African Americans | 84 | 57.0 | 8.0 |

CHAPTER 7

RELIABILITY

In this chapter, multiple types of reliability indexes are presented. For the total tests, two measures of the reliability of raw scores and the classical standard error of measurement (SEM) are given. At the passing cut scores, conditional standard errors of measurement (CSEM) for raw scores, for scale scores, and measures of decision consistency were determined.

7.1 RELIABILITY OF RAW SCORES

Table 7.1 reports the reliability coefficients and SEMs. The reliabilities of the total raw scores were computed using the Kuder-Richardson formulas 20 (KR20) and 21 (KR21). The KR21 reliability coefficients were used in computing the CSEM for the raw scores shown below, in section 7.2.

TABLE 7.1
2004–05 EOCEP Reliability Coefficients of Raw Scores

| Administration | Number of Items | Number of Test-Takers | KR20 | KR21 | SEM |
|-----------------------------------------------------|-----------------|-----------------------|------|------|------|
| Algebra 1/Mathematics for the Technologies 2 | | | | | |
| Fall 2004 | 50 | 8,848 | 0.84 | 0.81 | 3.16 |
| Spring 2005 | 50 | 45,446 | 0.89 | 0.87 | 3.06 |
| Summer 2005 | 50 | 1,335 | 0.75 | 0.71 | 3.16 |
| English 1 | | | | | |
| Fall 2004 | 55 | 8,126 | 0.89 | 0.88 | 3.16 |
| Spring 2005 | 55 | 44,404 | 0.90 | 0.87 | 2.87 |
| Summer 2005 | 54 | 791 | 0.86 | 0.84 | 3.25 |
| Biology 1/Applied Biology 2 | | | | | |
| Fall 2004 | 55 | 11,260 | 0.84 | 0.82 | 3.32 |
| Spring 2005 | 55 | 26,437 | 0.86 | 0.84 | 3.27 |
| Summer 2005 | 55 | 157 | 0.79 | 0.76 | 3.37 |
| Physical Science | | | | | |
| Fall 2004 | 55 | 12,915 | 0.85 | 0.84 | 3.40 |
| Spring 2005 | 55 | 34,542 | 0.85 | 0.84 | 3.36 |
| Summer 2005 | 55 | 175 | 0.75 | 0.73 | 3.42 |

7.2 OVERALL AND CONDITIONAL SEM

The overall classical SEM is defined as $s_x\sqrt{1-r_{xx}}$, where s_x is the standard deviation of the scale score and r_{xx} is the reliability coefficient. The CSEM for raw scores at the cut score was computed using the following formula (Feldt and Qualls 1998; Huynh, Meyer, and Barton 2000):

$$\text{raw score } CSEM = \sqrt{\left(\frac{1-KR20}{1-KR21}\right)\left(\frac{c(k-c)}{k-1}\right)}, \text{ where } c = \text{cut score and } k = \text{number of items.}$$

The scale score CSEM at the passing cut score was computed on the basis of the conditional standard error of the Rasch ability cut score. The scale score CSEM is defined as the reciprocal of the square root of the test information function at the point on the ability continuum that corresponds to the scale score cut (Hambleton, Swaminathan, and Rogers 1991). Although classical and conditional SEMs serve similar roles, the values of the conditional standard errors are determined separately for each possible test score, while the classical SEM is a single value used for all scores. Table 7.2 presents both the raw score and scale score CSEMs.

TABLE 7.2
2004–05 EOCEP Conditional Standard Errors of Measurement

| Administration | Raw Scores | Scale Scores |
|----------------------------------------------------|-------------------|---------------------|
| Algebra/ Mathematics for the Technologies 2 | | |
| Fall 2004 | 3.26 | 4.16 |
| Spring 2005 | 3.30 | 4.11 |
| Summer 2005 | 3.24 | 4.22 |
| English 1 | | |
| Fall 2004 | 3.42 | 3.78 |
| Spring 2005 | 3.22 | 3.82 |
| Summer 2005 | 3.39 | 3.84 |
| Biology 1/Applied Biology 2 | | |
| Fall 2004 | 3.50 | 3.89 |
| Spring 2005 | 3.47 | 3.90 |
| Summer 2005 | 3.50 | 3.97 |
| Physical Science | | |
| Fall 2004 | 3.58 | 4.81 |
| Spring 2005 | 3.55 | 4.84 |
| Summer 2005 | 3.55 | 4.84 |

7.3 CONSISTENCY OF PASSING CUT SCORES

When student performance is reported in a pass or fail category, a reliability index is computed in terms of the probabilities of consistent classification of students, as specified in standard 2.15 in *Standards for Educational and Psychological Testing* (AERA, APA, and NCME 1999). This index takes into consideration the consistency of classifications for the percentage of examinees who would be classified in the same way on a second (hypothetical) EOCEP administration using either the same form or an alternate equivalent form.

Although a number of procedures are available for estimating classification errors (Livingston and Lewis 1995; Hanson and Brennan 1990; Huynh 1976; Subkoviak 1976), the AIR used the *beta* binomial distribution method (Huynh 1979; Huynh, Meyer, and Barton 2000). Table 7.3 presents a summary of agreements between the operational test classifications—that is, the percentages of students who would be consistently classified in the same category (pass or fail) on two equivalent administrations of the test. The consistency index for the passing score is computed for each administration.

TABLE 7.3
2004–05 EOCEP Consistency Index for Passing Scores

| Administration | Consistency Index |
|----------------------------------------------------|--------------------------|
| Algebra/ Mathematics for the Technologies 2 | |
| Fall 2004 | 89.7% |
| Spring 2005 | 92.6% |
| Summer 2005 | 84.0% |
| English 1 | |
| Fall 2004 | 89.2% |
| Spring 2005 | 90.5% |
| Summer 2005 | 87.0% |
| Biology 1/Applied Biology 2 | |
| Fall 2004 | 87.3% |
| Spring 2005 | 87.9% |
| Summer 2005 | 84.3% |
| Physical Science | |
| Fall 2004 | 87.1% |
| Spring 2005 | 87.3% |
| Summer 2005 | 85.6% |

CHAPTER 8

VALIDITY

Three types of validity evidence are reported for the algebra test forms: test content, item fairness, and internal structure. Evidence of content validity is presented in the item content distribution across domains and the alignment of the 2004–05 EOCEP test items with the state content standards. Evidence of item fairness is examined with the information on differential item functioning (DIF). Evidence of internal structure is provided in correlations among content domains.

8.1 ITEM DISTRIBUTION ACROSS CONTENT DOMAINS

The EOCEP operational and implementation test forms were constructed according to the test specifications and the test blueprints. These items measured the specific assessment standards that were approved by the SCDE. All items in the test forms were reviewed by the content review committee and the sensitivity review committee and were approved by the SCDE. The 2004–05 EOCEP test form specifications are presented in tables 8.1 through 8.4 by subject.

TABLE 8.1
EOCEP TEST Item Distribution by Content Domain for
Algebra 1/Mathematics for the Technologies 2

| Content Domain | Fall | Spring | Summer |
|------------------------------------------------------------|-------------|---------------|---------------|
| I. Understanding Functions | | | |
| A. Relationships | 5 | 5 | 5 |
| B. Linear and Quadratic Functions and Data Representations | 5 | 5 | 5 |
| C. Generalizations, Algebraic Symbols, and Matrices | 4 | 4 | 4 |
| D. Algebraic Expressions in Problem Solving Situations | 6 | 6 | 6 |
| II. Linear Functions | | | |
| A. Representations | 4 | 4 | 4 |
| B. Interpretations | 8 | 8 | 8 |
| C. Equations and Inequalities | 7 | 7 | 7 |
| D. Systems of Linear Equations | 3 | 3 | 3 |
| III. Quadratic and Other Functions | | | |
| A. Quadratic Functions | 5 | 5 | 5 |
| B. Other Functions | 3 | 3 | 3 |
| Totals | 50 | 50 | 50 |

TABLE 8.2
EOCEP TEST Item Distribution by Content Domain for English 1

| Strand/Topic | Fall | Spring | Summer |
|---------------------------|-------------|---------------|---------------|
| R1. Reading Comprehension | 13 | 13 | 12 |
| R2. Analysis of Text | 15 | 14 | 16 |
| R3. Word Analysis | 8 | 9 | 3 |
| RS. Research | 3 | 3 | 2 |
| W1. Writing | 11 | 11 | 11 |
| C1. Communication | 5 | 5 | 5 |
| Totals | 55 | 55 | 54 |

TABLE 8.3
EOCEP TEST Item Distribution by Content Domain for Biology 1/Applied Biology 2

| Content Domain | Fall | Spring | Summer |
|--------------------------------------|-------------|---------------|---------------|
| I. Inquiry | | | |
| A. Identify Questions | 3 | 2 | 2 |
| B. Design and Conduct Investigations | 9 | 9 | 10 |
| C. Math in Science | 1 | 1 | 1 |
| D. Scientific Explanations | 0 | 2 | 2 |
| E. Alternative Explanations | 0 | 0 | 0 |
| G. Scientific Inquiry | 1 | 0 | 0 |
| II. Biology | | | |
| A. The Cell | 9 | 9 | 8 |
| B. Heredity | 7 | 7 | 7 |
| C. Biological Evolution | 5 | 5 | 5 |
| D. Interdependence of Organisms | 9 | 9 | 9 |
| E. Matter, Energy and Organization | 6 | 7 | 7 |
| F. Behavior and Regulation | 5 | 4 | 4 |
| Totals | 55 | 55 | 55 |

TABLE 8.4**EOCEP TEST Item Distribution by Content Domain for Physical Science**

| Content Domain | Fall | Spring | Summer |
|--------------------------------------------------------|-------------|---------------|---------------|
| I. Inquiry | | | |
| A. Identify Questions | 2 | 1 | 2 |
| B. Design and Conduct Investigations | 8 | 9 | 6 |
| C. Math in Science | 3 | 3 | 4 |
| D. Scientific Explanations | 0 | 1 | 1 |
| E. Alternative Explanations | 1 | 0 | 0 |
| G. Scientific Inquiry | 0 | 0 | 1 |
| II. Chemistry | | | |
| A. Structure of Atoms | 3 | 3 | 3 |
| B. Structure and Properties of Matter | 11 | 11 | 11 |
| C. Chemical Reactions | 6 | 6 | 6 |
| III. Physics | | | |
| A. Motions and Forces | 12 | 12 | 12 |
| B. Conservation of Energy and the Increase in Disorder | 5 | 5 | 5 |
| C. Interactions of Energy and Matter | 4 | 4 | 4 |
| Totals | 55 | 55 | 55 |

8.2 ITEM DEVELOPMENT

All EOCEP items were developed with reference to the South Carolina curriculum standards and measurement guidelines. Various committees reviewed all items; only items approved by these committees and the SCDE were included in the operational forms.

8.3 DIFFERENTIAL ITEM FUNCTIONING

A critical issue in statewide high-stakes testing is whether the test is fair to all test-takers; therefore, an important goal of item and test development is to produce a pool of items that are judged to be free of bias either toward or against any group of students. All EOCEP items were reviewed both for bias and for differential item functioning (DIF).

The sensitivity review committee examined the EOCEP items for potential bias, including language that might disadvantage a particular group, might be considered offensive to members of a particular group, or might present obstacles to a particular group due to factors unrelated to content and processes specified in the standards.

As with other statistical methodologies, there are numerous widely accepted approaches to detecting potential unfairness in test items. Many of these methods fall into the general category of DIF analyses. DIF statistics provide information regarding relative group performance at the item level for gender and ethnic comparisons while controlling for ability. Once an item is

flagged for a significant DIF, judgment is used to determine whether the difference in difficulty shown by the DIF index is unfairly related to group membership. The DIF statistics do not necessarily indicate bias or unfairness in an item but may simply show the relative strengths and weaknesses of the two groups being compared after the overall ability that the test is intended to measure has been controlled for.

Procedure:

The procedure that the AIR selected for detecting DIF was the Mantel-Haenszel (MH) chi-square for dichotomous items. The AIR calculated the Mantel-Haenszel statistic (MH D-DIF) for MC items (Holland and Thayer 1988) to measure the degree and magnitude of DIF. The examinee group of interest is the *focal* group, and the group to which performance on the item is being compared is the *reference* group. In this report, the focal groups for DIF were females and African Americans.

Items were separated into one of three categories on the basis of DIF statistics (Holland and Thayer 1988; Dorans and Holland 1993): negligible DIF (category A), intermediate DIF (category B), and large DIF (category C). The items in category C, which exhibit significant DIF, are of primary concern.

Positive values of *delta* indicate that the item is easier for the *focal* group, suggesting that the item favors the *focal* group. A negative value of *delta* indicates that the item is more difficult for the *focal* group. The item classifications are based on the Mantel-Haenszel chi-square and the MH delta (Δ) value as follows:

- The item is classified as C category if the absolute value of the MH delta value (i.e., $|\Delta|$) is significantly greater than 1 and also greater than or equal to 1.5.
- The item is classified as B category if the MH delta value (Δ) is significantly different from 0 and either the absolute value of the MH delta ($|\Delta|$) is less than 1.5 or the absolute value of the MH delta ($|\Delta|$) is not significantly different from 1.
- The item is classified as A category if delta value (Δ) is not significantly different from 0 or the absolute value of delta ($|\Delta|$) is less than or equal to 1.

The data in table 8.5, below, summarize the number of items in DIF categories for the 2004–05 operational test items.

When the operational forms were constructed, all item statistics from the initial field test were reviewed and approved by the SCDE. Due to the large number of items subjected to DIF analyses, erroneous flags could be expected. All flagged items were closely examined by the SCDE. Inclusion of any flagged item on an operational form (i.e., an item classified as C category) was possible only when the SCDE had approved that item.

TABLE 8.5
Summary of Differential Item Functioning for
2004–05 EOCEP Operational Items

| Administration | Cat | Whites/African Americans | | | | Males/Females | | | |
|----------------|-----|--------------------------|-----|-----|----|---------------|-----|-----|----|
| | | Alg | Eng | Bio | PS | Alg | Eng | Bio | PS |
| Fall | A+ | 20 | 24 | 30 | 23 | 29 | 34 | 26 | 33 |
| | A– | 24 | 28 | 20 | 25 | 17 | 21 | 25 | 20 |
| | B+ | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| | B– | 3 | 2 | 4 | 2 | 2 | 0 | 2 | 2 |
| | C+ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C– | 3 | 0 | 1 | 4 | 2 | 0 | 2 | 0 |
| Spring | A+ | 23 | 22 | 27 | 24 | 29 | 35 | 32 | 27 |
| | A– | 19 | 30 | 24 | 29 | 18 | 19 | 23 | 27 |
| | B+ | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | B– | 6 | 2 | 4 | 2 | 2 | 1 | 0 | 1 |
| | C+ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C– | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

8.4 CORRELATIONS AMONG CONTENT DOMAINS

Evidence of internal structure was examined using correlations among content domains. On the following pages, tables 8.6 through 8.9 report the correlation matrices for the raw scores among content domains for each test.

TABLE 8.6
Correlations among Domain Scores for the 2004–05 EOCEP Test in
Algebra 1/Mathematics for the Technologies 2

| Domain * | UF | LF | QOF | Number of Items |
|-------------------------------------------|------|------|------|--------------------|
| Fall Administration (N = 8,847) | | | | |
| UF | 1.00 | 0.66 | 0.49 | 20 |
| LF | — | 1.00 | 0.51 | 22 |
| QOF | — | — | 1.00 | 8 |
| Spring Administration (N = 45,428) | | | | |
| UF | 1.00 | 0.74 | 0.62 | 20 |
| LF | — | 1.00 | 0.65 | 22 |
| QOF | — | — | 1.00 | 8 |
| Summer Administration (N = 1,328) | | | | |
| UF | 1.00 | 0.57 | 0.37 | 20 |
| LF | — | 1.00 | 0.39 | 22 |
| QOF | — | — | 1.00 | 8 |

* UF = Understanding Functions
 LF = Linear Functions
 QOF = Quadratic and Other Functions

TABLE 8.7
Correlations among Domain Scores for the 2004–05 EOCEP Test in English 1

| Domain * | R1 | R2 | R3 | RS | C1 | W1 | Number of Items |
|-------------------------------------------|------|------|------|------|------|------|--------------------|
| Fall Administration (N = 8,126) | | | | | | | |
| R1 | 1.00 | 0.63 | 0.56 | 0.37 | 0.48 | 0.53 | 13 |
| R2 | — | 1.00 | 0.67 | 0.41 | 0.54 | 0.62 | 15 |
| R3 | — | — | 1.00 | 0.38 | 0.49 | 0.57 | 8 |
| RS | — | — | — | 1.00 | 0.33 | 0.38 | 3 |
| C1 | — | — | — | — | 1.00 | 0.50 | 5 |
| W1 | — | — | — | — | — | 1.00 | 11 |
| Spring Administration (N = 44,404) | | | | | | | |
| R1 | 1.00 | 0.69 | 0.59 | 0.32 | 0.53 | 0.55 | 13 |
| R2 | — | 1.00 | 0.61 | 0.35 | 0.58 | 0.60 | 14 |
| R3 | — | — | 1.00 | 0.34 | 0.48 | 0.55 | 9 |
| RS | — | — | — | 1.00 | 0.32 | 0.35 | 3 |
| C1 | — | — | — | — | 1.00 | 0.54 | 5 |
| W1 | — | — | — | — | — | 1.00 | 11 |
| Summer Administration (N = 791) | | | | | | | |
| R1 | 1.00 | 0.60 | 0.49 | 0.35 | 0.49 | 0.45 | 12 |
| R2 | — | 1.00 | 0.50 | 0.36 | 0.52 | 0.52 | 16 |
| R3 | — | — | 1.00 | 0.29 | 0.40 | 0.37 | 8 |
| RS | — | — | — | 1.00 | 0.31 | 0.28 | 2 |
| C1 | — | — | — | — | 1.00 | 0.49 | 5 |
| W1 | — | — | — | — | — | 1.00 | 11 |

* R1 = Reading Comprehension RS = Research
 R2 = Analysis of Texts C1 = Communication
 R3 = Word Analysis W1 = Writing

TABLE 8.8
Correlations among Domain Scores for 2004–05 EOCEP Test in
Biology 1/Applied Biology 2

| Domain | Inquiry | Biology | Number of Items |
|-------------------------------------------|---------|---------|-----------------|
| Fall Administration (N = 11,260) | | | |
| Inquiry | 1.00 | 0.68 | 14 |
| Biology | — | 1.00 | 41 |
| Spring Administration (N = 17,834) | | | |
| Inquiry | 1.00 | 0.73 | 14 |
| Biology | — | 1.00 | 41 |
| Summer Administration (N = 157) | | | |
| Inquiry | 1.00 | 0.66 | 15 |
| Biology | — | 1.00 | 40 |

TABLE 8.9
Correlations among Domain Scores for the EOCEP Test in
Physical Science

| Domain | Inquiry | Chemistry | Physics | Number of Items |
|-------------------------------------------|---------|-----------|---------|-----------------|
| Fall Administration (N = 12,915) | | | | |
| Inquiry | 1.00 | 0.60 | 0.63 | 14 |
| Chemistry | — | 1.00 | 0.63 | 20 |
| Physics | — | — | 1.00 | 21 |
| Spring Administration (N = 34,542) | | | | |
| Inquiry | 1.00 | 0.58 | 0.61 | 14 |
| Chemistry | — | 1.00 | 0.67 | 20 |
| Physics | — | — | 1.00 | 21 |
| Summer Administration (N = 175) | | | | |
| Inquiry | 1.00 | 0.39 | 0.44 | 14 |
| Chemistry | — | 1.00 | 0.49 | 20 |
| Physics | — | — | 1.00 | 21 |

WORKS CITED

- AERA, APA, and NCME 1999. *Standards for Educational and Psychological Testing*. Washington, DC: American Educational Research Association.
- Dorans, Neil J., and Paul W. Holland. 1993. "DIF Detection and Description: Mantel-Haenszel and Standardization." In *Differential Item Functioning*, edited by Paul W. Holland and Howard Wainer. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Feldt, Leonard S., and Audrey L. Qualls. 1998. "Approximating Scale Score Standard Error of Measurement from the Raw Score Standard Error." *Applied Measurement in Education* 11, no. 2:159–77.
- Hambleton, Ronald K., Hariharan Swaminathan, and H. Jane Rogers. 1991. *Fundamentals of Item Response Theory*. Newbury Park, CA: Sage Publications.
- Hanson, Bradley A., and Robert L. Brennan. 1990. "An Investigation of Classification Consistency Indexes Estimated under Alternative Strong True Score Models." *Journal of Educational Measurement* 27:345–59.
- Holland, P. W., and Dorothy T. Thayer. 1988. "Differential Item Performance and the Mantel-Haenszel Procedure." In *Test Validity*, edited by Howard Wainer and Henry I. Braun. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Huynh, Huynh. 1976. "On the Reliability of Decisions in Domain-Referenced Testing." *Journal of Educational Measurement* 13:253–64.
- . 1979. "Computational and Statistical Inference for Two Reliability Indices Based on the Beta-Binomial Model." *Journal of Educational Statistics* 4:231–46.
- Huynh, H., J. Patrick Meyer III, and Karen Barton. 2000. *Technical Documentation for the 1999 Palmetto Achievement Challenge Tests of English Language Arts and Mathematics, Grades Three through Eight*. Columbia: South Carolina Department of Education.
- Linacre, John M., and Benjamin D. Wright. 2003. *WINSTEPS Rasch-Model Computer Program*. Chicago: Mesa Press.
- Livingston, Samuel A., and Charles Lewis. 1995. "Estimating the Consistency and Accuracy of Classifications Based on Test Scores." *Journal of Educational Measurement* 32:179–97.
- Rasch, Georg. 1960. *Probabilistic Models for Some Intelligence and Attainment Tests*. Copenhagen: Danish Institute for Educational Research.
- SCDE. 2004a. *Fall 2004 District Test Coordinator's Supplement*. Columbia: South Carolina Department of Education.
- . 2004b. *Test Administration Manual for School Test Coordinators and Test Administrators*. Columbia: South Carolina Department of Education.
- . 2005a. *Spring 2005 District Test Coordinator's Supplement*. Columbia: South Carolina Department of Education.

———. 2005b. *Spring 2005 Test Administration Manual for School Test Coordinators and Test Administrators*. Columbia: South Carolina Department of Education.

———. 2005c. *Summer 2005 District Test Coordinator's Supplement*. Columbia: South Carolina Department of Education.

———. 2005d. *Summer 2005 Test Administration Manual for School Test Coordinators and Test Administrators*. Columbia: South Carolina Department of Education.

Subkoviak, Michael J. 1976. "Estimating Reliability from a Single Administration of a Criterion-Referenced Test." *Journal of Educational Measurement* 13:265–76.

Wright, Benjamin D., and Mark H. Stone. 1979. *Best Test Design*. Chicago: Mesa Press.

The South Carolina Department of Education does not discriminate on the basis of race, color, national origin, sex, or disability in admission to, treatment in, or employment in its programs and activities. Inquiries regarding the nondiscrimination policies should be made to the director of the Office of Human Resources, 1429 Senate Street, Columbia, South Carolina 29201, 803-734-8505.