South Carolina
Alternate Assessment
(SC-Alt)

South Carolina's Alternate Assessment, SC-Alt
Spring 2016 Operational Test Administration

Technical Report
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American Institutes for Research
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Introduction

This technical report details the design, development, and the spring 2016 operational test results for the South Carolina Alternate Assessment (SC-Alt) in science and social studies for grade bands 4-5 and 6-8, and in high school biology.

Technical documentation for ELA and mathematics assessments is not included in this technical report, as these content areas were not assessed with the SC-Alt.

South Carolina is a member of the National Center and State Collaborative (NCSC) funded through a General Supervision Enhancement Grant (GSEG) from the United States Education Department (USED) Office of Special Education Programs (OSEP). As a member of this multi-state grant project, South Carolina administered the NCSC English Language Arts and mathematics for the spring 2016 administration.

Chapter 1: *Development of Alternate Assessment in South Carolina* describes the background of the development of alternate assessments in South Carolina to meet the requirements of the Individuals with Disabilities Education Act (IDEA) and the Elementary and Secondary Education Act (ESEA).

Chapter 2: *Test Development* describes the design of the alternate assessment and the development of tasks and items to measure academic growth among students who have significant cognitive disabilities. The Student Placement Questionnaire (SPQ), a unique feature designed to maximize the efficiency of teacher and student testing time, is described and thoroughly reviewed. The development of a vertical scale linking grade-appropriate tasks across grade levels and complexity levels within grades is described.

Chapter 3: *Spring 2016 Operational Test Administration* details the spring 2016 operational test administration in science, and high school biology, and social studies; test administrator training; use of the SPQ; measures taken to ensure the accuracy of scoring; and the maintenance of test security.

Chapter 4: *Performance Standards* describes the performance setting standards procedures employed for SC-Alt.

Chapter 5: *Technical Characteristics and Interpretation of Student Scores* reviews technical topics including analysis and scaling, reliability of test scores, the procedures used to calculate internal consistency reliability estimates, and classification accuracy estimates.

Chapter 6: *Score Reports* describes the score reporting system for SC-Alt with emphasis on the Individual Student (Family) Report (see Appendix F) from which the summary reports are derived, the information contained in the various reports, and their intended uses.

Chapter 7: *Student Performance Data from the Spring 2016 Administration* provides an overview of statewide achievement on the SC-Alt in science, social studies, and high school biology tests, based on the spring 2016 operational test administration.

Chapter 8: *Validity* reports on content validity, and convergent and discriminant validity topics as well as the validity of the SPQ and the operational performance of the tailored assessment under the SPQ's start and stop rules.

Chapter 1: Development of Alternate Assessment in South Carolina

Overview of the State Assessment System

For the 2015-16 school year the South Carolina Assessment System includes the South Carolina Palmetto Assessment of State Standards (SCPASS) in science and social studies in grades 4-8, and biology in high school, a college- and career-ready assessment in English language Arts (ELA) and mathematics in grades 3-8 and 11, the End-of-Course Examination Program (EOCEP), and a college- and career-readiness assessment in ELA and mathematics in grades 3-8, grades 9 and 10 (if funds are available), and grade 11. These state-level assessments are required by the Education Accountability Act of 1998 (EAA) as amended in June 2014 and are aligned with the state's academic standards for each subject and grade level.

- SCPASS measures the performance of all public school students in grades 4–8 in the content areas of science, social studies, and high school biology.
- EOCEP is administered in gateway courses at the high school level. The Biology EOCEP examination is counted for participation purposes for Federal ESEA reporting.
- SC Ready was the college- and career-readiness assessment conducted in grades 3-8 in ELA and mathematics
- The ACT® is the college- and career-readiness assessment conducted in grade 11 in ELA and mathematics.

The EAA establishes a performance-based accountability system that includes all students. This act supports South Carolina's commitment to public education and a conviction that high expectations for all students are a vital component of improving academic education.

The goals of the state assessment system are as follows:

- Increasing academic performance of all children and, ultimately, raising high school graduation rates;
- Implementing rigorous academic achievement standards that are aligned with the South Carolina curriculum standards;
- Improving instruction, based in part on the implementation of these higher standards; and
- Using the results of challenging assessments that measure student performance relative to these standards.

Another goal is to inform various audiences—teachers, school administrators, district administrators, South Carolina State Department of Education (SCDE) staff, parents, and the public—of the status of academic performance and of the progress of public school students toward meeting South Carolina's academic achievement standards.

The South Carolina academic standards form the basis for alignment across the state education system for district and school curricula, classroom instruction, units of study, and learning experiences. **The state academic standards are the basis for all assessments in the state assessment system, including the alternate assessment.**

Purpose of the South Carolina Alternate Assessment

The purpose of the alternate assessment based on alternate achievement standards is to capture and evaluate the performance of students who have traditionally been excluded from statewide testing programs and to improve instruction for these students by promoting appropriately high expectations and the inclusion of these students in state accountability for district report cards and for adequate yearly progress (AYP) reporting at the school, district, and state levels.

Description of the South Carolina Alternate Assessment

The SC-Alt is administered to students who have been determined by the Individualized Education Program (IEP) team to be unable to participate in the general state assessments even with appropriate accommodations.

The SC-Alt consists of a series of performance tasks that are scored by the test administrator (teacher) as they are administered. The performance tasks are scripted activities, and each task contains four to eight related items. The items have a scaffolded scoring script to reduce the complexity of the item when students do not respond successfully on the first attempt. All items are linked to the South Carolina academic content standards through the SC-Alt Extended Standards. The Extended Standards are linked explicitly to the South Carolina academic standards for grades 4–8 and high school, although at less complex or prerequisite levels. The SC-Alt has three forms: elementary, middle, and high school. Assignment to forms is based on the student's age on September 1 of the tested year; 9- to 10-year-olds take the elementary form, 11- to 13-year-olds take the middle school form, and 16-year-olds take the high school form.

The assessment is designed to minimize the teacher and student testing burden by administering only those items that are well-suited to a student's achievement level. The test administrator completes an SPQ to determine the most appropriate starting task for the student. Tasks are arranged in ascending order of difficulty. Once the appropriate starting task is identified, test administrators continue to administer tasks until the student can no longer respond successfully.

The first operational administration of the SC-Alt was conducted during a seven-week testing window during spring 2007 in ELA, mathematics, and science. A census field test was conducted during the same assessment window for social studies. In 2009, 2011, 2012, and 2013, embedded field test items in ELA, mathematics, science, and social studies were administered together with the operational assessment. Also in 2011, high school biology was introduced as an operational assessment.

Since 2012, there have been two relatively minor changes in form building: the high school biology assessment included 12 operational tasks and three field-test tasks, and its start points were adjusted to be consistent with the other subjects. Linking tasks were still administered in two adjacent grade-bands, but they were scored operationally only in the lower grade-band.

In 2013, each form had 12 operational and operational field-test tasks and three field-test tasks; common tasks existed between ELA grades 3–5 and 6–8 forms, and math grades 6–8 and 10 forms, respectively; there was only one vertical linking task in the adjacent grade-bands.

In 2014, both ELA and Mathematics had 12 operational tasks in each form and science/biology and social studies had 15 tasks, with eight operational tasks, four operational field-test tasks, and three field-test tasks in each form.

In 2015, there were 12 operational tasks in each form of science and social studies 4–5 and 6–8 tests including one embedded operational filed-test task in the science grade band 6–8 form. No linking tasks existed in either form.

In 2016, 12 operational tasks are administered in each form of science, biology, and social studies. Documentation related to the 2016 operational administration is the focus of this technical report.

Background on Alternate Assessment Development in South Carolina

The 1997 amendments to the Individuals with Disabilities Education Act (IDEA ’97) created the mandate to include all children, including children with significant disabilities, in state testing and accountability systems. The vision for the South Carolina alternate assessment system was initiated in early 1998 in response to the IDEA ’97 regulations. This vision has driven the development and revision of alternate assessment in South Carolina.

A core team of staff from the SCDE Offices of Exceptional Children, Assessment, Research, and Curriculum and Standards met in March 1998 to develop a plan for designing an alternate assessment to meet the IDEA ’97 mandate and to be included in the state assessment system. The team’s first steps were to convene a steering committee and seek technical assistance from the Mid-South Regional Resource Center (MSRRC) to explore strategies for designing an alternate assessment.

The Alternate Assessment Steering Committee convened on May 12, 1998, to assist SCDE in determining how to include students with significant cognitive disabilities in statewide assessments. The committee comprised parents, special education and general education teachers, administrators, and representatives from other agencies. Dr. Ken Olsen of MSRRC provided the committee with technical assistance, including information on IDEA ’97 requirements, examples of options that some states were using or considering, and research available on alternate assessment. He facilitated a process that allowed the Steering Committee to reach shared foundational beliefs, address eligibility criteria and content and performance standards, and develop plans.

To ensure that all students, including students with significant disabilities, are included in the testing and accountability systems and have appropriate access to instruction in the South Carolina academic standards, the Steering Committee determined that the alternate assessment would be based on the following principles:

- All children can learn, be expected to meet, and be challenged to meet high standards.
- Special education is an extension and adaptation of the general education program and curriculum, rather than an alternate or separate system.

- The South Carolina State Board-approved standards are the foundation for all students, including students with unique needs and abilities.
- Measurement and reporting must be defensible in terms of feasibility, validity, reliability, and comparability.
- Results of the state standards-based program must be used to improve planning, instruction, and learning.
- An alternate assessment is appropriate for the few students for whom the state assessment, even with accommodations, is not appropriate.
- The alternate assessment is designed for a diverse group of students and should be flexible enough to address their individual needs.

The committee articulated these goals for the alternate assessment:

- Provide evidence that the student has acquired the skills and knowledge necessary to become as independent as possible;
- Document the student's performance and the performance of the programs serving the student;
- Merge instructional best practice, instruction in state standards, and assessment activities; and
- Provide information in the development of curriculum that is responsive to the student's needs.

The Steering Committee created the following participation guidelines to guide IEP team decisions regarding students who should participate in the alternate assessment:

- The student demonstrates significant cognitive disabilities and adaptive skills, which result in performance that is substantially below grade-level achievement expectations even with the use of accommodations and modifications.
- The student accesses the state-approved curriculum standards at less complex levels and with extensively modified instruction.
- The student has current adaptive skills requiring extensive direct instruction and practice in multiple settings to accomplish the application and transfer of skills necessary for application in school, work, home, and community environments.
- The student is unable to apply or use academic skills across natural settings when instructed solely or primarily through classroom instruction.
- The student's inability to achieve the state grade-level achievement expectations is not the result of excessive or extended absences or social, cultural, or economic differences.

NOTE: The term "significant cognitive disabilities" was added by the South Carolina Alternate Assessment Advisory Committee to the criteria after the passage of the NCLB December 2003 regulations on alternate assessment.

The Steering Committee recommended that the state develop a portfolio collection of evidence of student progress toward the South Carolina academic standards similar in design to the Kentucky Portfolio Alternate Assessment. The committee also recommended that SCDE prepare a Request for Proposal (RFP) for a contractor to develop the alternate assessment. Advanced Systems in Measurement and Evaluation Inc. (ASME), which later became Measured Progress, was awarded the contract. This company, along with the Inclusive Large Scale Standards and Assessment (ILSSA) project at the University of Kentucky, began work with SCDE on the design of the Palmetto Achievement Challenges Test-Alternate (PACT-Alt).

A work group was convened to define the domain for instruction and assessment. To ensure that the South Carolina curriculum standards were the foundation for all students, including students with unique needs and abilities, the work group developed adaptations of the curriculum standards. The work group comprised special education teachers, regular education teachers, parents, administrators, higher education personnel, representatives from community agencies, and SCDE personnel. The work group process, which was facilitated by staff from MSRRC, focused on the prerequisite skills found primarily in the curriculum standards in prekindergarten through grade 2.

The work group affirmed that special education services must operate as an extension of the general education program and curriculum rather than as an alternate or separate system. The standards in this initial document were identified as concepts that every student, including students with moderate to severe disabilities, should know or be able to perform. These selected standards, which focused on skills that were deemed essential and attainable for every student, were directed toward the following goals:

- Enhancing the quality of students' communication skills;
- Improving the quality of students' everyday living;
- Improving students' ability to function in society and promoting in them an acceptance of and respect for self and others;
- Preparing students for transition into adult living; and
- Moving students toward independence, which may range from a level of self-care with assistance to total self-sufficiency

The extensions were based on the state academic content standards in prekindergarten through grade 2. For each selected standard, examples of essential real-world performance skills were developed. The articulation of these performance skills was designed to provide the rationale for teaching the standards and to serve as guides for teachers and parents regarding how the student demonstrated a skill. The committee specified that these performance skills could be accomplished in home, school, and community environments through a variety of individualized communication systems and might incorporate a variety of supports, such as physical assistance, physical prompts, verbal prompts, and technology. The document *The Extensions and Adaptations of the South Carolina Curriculum Standards for Students Participating in Alternate Assessment* became the focus of the portfolio assessment process, HSAP-Alt performance tasks, and professional development training. In 2002, this document was revised and renamed the *Resource Guide to the South Carolina Curriculum Standards for Students in Alternate*

Assessment, but it was still aligned to curriculum standards for prekindergarten through grade 2. This work was based on the IDEA ’97 requirements and the thinking at the time about how students with significant cognitive disabilities should be included in the general education curriculum and assessment.

Beginning with the 2000–2001 school year, students in grades 3–8 who met the participation criteria for alternate assessment were assessed with the portfolio assessment PACT-Alt. In 2003, the high school assessment HSAP, which was designed to meet AYP requirements, was added to the state assessment system, and an alternate to HSAP was developed to measure student proficiency in ELA and mathematics. A Stakeholder Committee with expertise in high school instruction of students with significant cognitive disabilities and academic standards was convened to guide the development of the high school alternate assessment, HSAP-Alt. The committee recommended designing an assessment based on performance on a series of tasks linked to the state curriculum standards. The HSAP-Alt consisted of a series of scripted performance tasks in ELA and mathematics with scaffolded administration and scoring procedures aligned with the *Resource Guide to the South Carolina Curriculum Standards for Students in Alternate Assessment*.

One critical piece of the development and implementation process of PACT-Alt and HSAP-Alt was the provision of intensive professional development related to standards-based instruction, much of it based on the work of Harold Kleinert and Jacqui Farmer Kearns. A resource for professional development was their book *Alternate Assessment: Measuring Outcomes and Supports for Students with Disabilities* (2001). Professional development was essential to the implementation of the portfolio assessment because the teacher was responsible for teaching the student the content related to the academic standards, assessing the student’s progress, and providing evidence of the instruction and progress in the portfolio. Prior to the implementation of the alternate assessment and the IDEA ’97 requirement to include students with disabilities in the general education curriculum, many students with disabilities, especially those with significant disabilities, and their teachers had been excluded from standards-based instruction and professional development related to academic standards.

Transition from PACT-Alt and HSAP-Alt to SC-Alt

After seeking input on the vision of a new alternate assessment on alternate achievement standards from the Advisory Committee and teachers who were conducting alternate assessment, SCDE wrote an RFP for the redesign or design of the alternate assessment system. The design was to be consistent with South Carolina’s commitment to the instruction and assessment of students with significant cognitive disabilities and NCLB requirements. The focus was to be on grade-level academic standards. The new system was to address concerns related to teacher burden and time involved in assessment while supporting improved instruction based on state academic achievement standards. Extensive training for test administrators was to be integrated into the design of the assessment.

In September 2004, a contract was awarded to American Institutes for Research (AIR) to assist the state in revising the alternate assessment. AIR managed the administration and analyses of the PACT-Alt and HSAP-Alt assessments during the 2004–2005 and 2005–2006 school years while developing the new alternate assessment, the South Carolina Alternate Assessment (SC-Alt), with SCDE.

American Institutes for Research

AIR has more than 50 years of experience as a nonprofit organization dedicated to assessment, behavioral science, and educational research. AIR developed the South Carolina HSAP and the EOCEP programs and has enjoyed a successful collaboration with SCDE for a number of years.

Chapter 2: Test Development

The South Carolina academic content standards are the basis for alignment across the state for district and school curricula, classroom instruction, units of study, and learning experiences. The curriculum standards are the basis for the PASS, the HSAP, the EOCEP, and the alternate assessment. An initial step in the design of the alternate assessment was developing Assessment Standards and Measurement Guidelines (ASMGs).

Development of the Assessment Standards and Measurement Guidelines

In April 2005, a committee comprising South Carolina special education teachers, content specialists, SCDE staff, and AIR staff designed the ASMG document to support the new assessment development. The process involved extending the state academic standards in ELA, mathematics, science, and social studies in grade-bands 3–5, 6–8, and 10 to be accessible to students with significant cognitive disabilities. This document replaced the *Resource Guide to the South Carolina Curriculum Standards for Students in Alternate Assessment.*

The ASMGs were the foundation for the development of the assessment tasks for the SC-Alt. The ASMGs in each content area are distillations of the essence of South Carolina curriculum standards at each grade level.

Each content area committee reviewed the large array of standards and prioritized those in grade-bands 3–5, 6–8, and 10 that they deemed most important to students now and in the future. They then reduced the complexity of these standards, while retaining the essence of the grade-level content knowledge and skills, to make the academic standards appropriate and accessible for students with significant cognitive disabilities. The committee was careful to address both the depth and the breadth of the academic standards and used professional judgment based on experience with the population and the content to determine the standards to be assessed. The resulting document provided the link to the grade-level standards and indicators in the state academic standards. The measurement guidelines gave task writers and teachers the specificity necessary to translate the assessment standards into assessment tasks and items and classroom instruction. A list of individuals who were involved in this process is included in each ASMG content document.

NOTE: The ELA 2005 committee recommended that the standards in the Research Goal not be included in the assessment standards. The rationale for this recommendation was that this goal was not tested to any great extent in PACT because this content is primarily taught and assessed at the classroom level. Committee members, however, indicated that the Communication Goal included standards that they deemed very important to this population, and they recommended including assessment standards for this strand.

The South Carolina State Board of Education adopted revised ELA and mathematics academic standards in August 2007 and May 2008. The South Carolina State Board of Education required replacement of the high school physical science end-of-course assessment for all students with a biology end-of-course assessment. The adoption of these revised standards, which occurred outside the cyclical review timetable, and the replacement of the physical science end-of-course assessment with the biology end-of-course assessment, had a direct impact on the ongoing schedule for developing additional tasks for the task pool.

During the 2007 and 2008 school years, committees of special educators and general educators met to extend the revised ELA, mathematics, and science academic standards, as well as the biology standards. These documents were designed to provide specificity for instruction as well as assessment, so the committees extended all standards and indicators including those for non-tested grades. These documents, referred to as the Extended Standards, replaced the ASMGs in ELA, mathematics, and science and provided extensions for biology. The Extended Standards provide extensions for all grade levels, including those that are not tested, and guidance to assist educators with instructional access to the state academic standards.

Stakeholder Input into the Development of the SC-Alt

To ensure the validity of the overall assessment process, a great deal of time and effort was spent obtaining input from various sources, including the State Alternate Assessment Advisory Committee, classroom teachers, parents, and other agency personnel.

South Carolina State Alternate Assessment Advisory Committee

The State Alternate Assessment Advisory Committee meets to provide oversight to the SC-Alt. The committee includes members of the original Alternate Assessment Steering Committee and the High School Stakeholder Committee. The committee also includes parents, special educators, and representatives of higher education, content specialists, special education directors, and district test coordinators. Additional members include representatives from the Department of Disabilities and Special Needs, the University of South Carolina School of Medicine, the South Carolina Assistive Technology Project, the South Carolina Interagency Deaf–Blind Project, the Autism Society of South Carolina, and Pro-Parents of South Carolina.

The Advisory Committee provided input on its expectations for the revised alternate assessment during the first meeting with the contractor, AIR, on November 5, 2004. SCDE and AIR staff reported each step of the development process to the Advisory Committee at each meeting and sought its advice and recommendations.

Early Development Activities

At the recommendation of the Advisory Committee, AIR item writers visited classrooms in South Carolina during January and February 2005 to observe teaching strategies and materials that were in use. They also reviewed PACT-Alt portfolios for examples of evidence that teachers used to demonstrate progress toward proficiency on grade-level standards and examined the characteristics of the HSAP-Alt performance event in order to build on the existing system.

Teacher focus groups convened during January 2005 and obtained feedback from teachers on the types of tasks they believed were appropriate, the protocol format they preferred, and the materials they recommended for inclusion in the assessment.

Qualified item writers employed by AIR were trained to write tasks and items specifically aligned with the ASMGs. Item writing teams included AIR staff with expertise in the content areas; alternate assessment specialists; and consultants in the areas of instruction of students who are blind and visually impaired, students who are deaf and hard of hearing, and students with cognitive disabilities.

On February 14, 2006, prior to the development of science and social studies tasks, SCDE staff and the AIR alternate assessment specialist provided additional training to the writing teams. The training was based on *Designing from the Ground Floor*, materials developed by the National Alternate Assessment Center (2005).

Consideration of universal design was a focus throughout the development process. Items, including passages and response options, were developed to use objects, pictures, picture symbols, words, and numbers. Several tasks in all four content areas and at different levels of complexity were piloted with South Carolina teachers and students in March and May 2005. AIR staff then interviewed the pilot teachers to determine the item characteristics and parameters that teachers believed worked well or did not work.

Summary of the Development and Review of the Original SC-Alt Tasks

- The task and item development process began with the creation of task kernels. AIR was primarily responsible for the majority of task kernels, with input from SCDE and teachers in South Carolina. Tasks kernels are basic ideas for an assessment activity, stimulus materials, and purpose, which, based on their relation to the South Carolina ASMGs, were used to develop a task and its items.
- SCDE reviewed the task kernels and provided feedback to AIR on which kernels were acceptable, which were unacceptable, and which needed revision. These reviews included alignment with the ASMGs.
- AIR item writers developed the items and stimulus materials. Content experts reviewed these items internally for clarity, quality, and alignment with the ASMGs.
- Following the comprehensive AIR internal review, the tasks and items underwent technical review by AIR to ensure that the items were properly keyed and scaffolded, the instructions were appropriate, the stimulus materials were interpretable, and the items were generally consistent in design with other tasks and items under development.
- Items that passed internal review by the AIR development staff were reviewed by the senior content lead for each content area and the senior alternate assessment specialist. This review ensured that within the content area, tasks and items followed the design of the assessment and were consistent with respect to format, presentation, and general administration procedures.
- Before items were passed to SCDE, the project director reviewed all items to ensure that they were consistent with the foregoing factors across content areas and grade-bands.
- Following the final internal AIR review, items were passed to SCDE for its review. During this process, SCDE staff, including content specialists, special educators, and assessment specialists, provided feedback to AIR on the design of the tasks and items, the alignment of items to the ASMGs, and the appropriateness of the items for use in South Carolina. Some items were revised by SCDE to improve alignment with the ASMGs.
- Approved items were placed into tasks for a small-scale tryout, conducted by AIR with the assistance of teachers in South Carolina and Northern Virginia and AIR staff. These tryouts provided invaluable information regarding the clarity of instructions, the utility of the

stimulus materials, and the success of the items and tasks in producing expected responses. Items that showed obvious problems were revised or discarded.

- After changes were made to the prototypes as a result of the pilots and tryouts, a committee of South Carolina teachers was convened on July 12, 2005, to review the revised tasks and provide further input and recommendations.

Content, Bias, and Sensitivity Reviews

Once small-scale tryouts were concluded, AIR, SCDE, and educators in South Carolina reviewed the tasks and items for alignment with the ASMGs and for bias and sensitivity concerns. The reviews for content and bias and sensitivity were combined because of the direct impact of the task format, materials, and language on the assessment accessibility for the population. Committees comprising teachers of students with significant cognitive disabilities, representatives of higher education, special education administrators, experts in the instruction of students with limited English proficiency (LEP), and content experts from across the state participated in these reviews to consider the following:

- Alignment to the ASMGs and Extended Standards;
- Bias for specific groups and types of disabilities;
- Accessibility of the tasks to the entire population for whom the test was designed;
- Characteristics that might lead to bias or are inappropriate for or insensitive to the nature of the student subgroups (e.g., exclusionary language, stereotypes);
- Format and content of the tasks;
- Accessibility of materials;
- Clarity of instructions; and
- Ease of administration.

The review committee meetings were conducted in November 2005, May 2006, and, for the spring 2009 embedded field test, in November 2008. For the 2010 biology field test, the content and bias and sensitivity review meetings were held in June 2009. For the 2011 to 2015 assessments, the committee reconvened in July of the year prior to the test administration in order to review newly developed field-test tasks. During the reviews, committee members recommended that some items be revised or eliminated.

Development of Field-Test Tasks and Forms

- On the basis of the feedback from all the steps above, AIR conducted a final review and sign-off for all items and tasks. Following this review, the items and tasks were affirmed ready for field testing.
- Prior to assembling tasks into test forms, the senior content lead for each content area and the project director reviewed the items and tasks a final time to determine whether the revisions were appropriate and maintained the alignment of the item to the targeted standard.

- For stand-alone field tests, tasks and their items were then placed into field-test forms consistent with the specifications described earlier. For embedded field tests, the tasks and their items were placed into designated locations on the operational test forms.

Item Data Review

- After field testing, AIR and SCDE staff, including alternate assessment specialists, psychometricians, content specialists, and special educators, met to review the field-test statistics.
- They reviewed the statistics associated with each item and task to determine whether the items were functioning within expectations and whether the tasks were appropriately placed within the instrument. The statistical criteria applied to the field-test item data and to the operational item data are described in Chapter 5.
- The committee also considered teacher comments on specific items from the field test, data from field-test observations, and the results of the alignment studies to make decisions about the inclusion of items in the operational assessment.
- The committee decided if an item was to be dropped or revised for recalibration.
- The item data review meetings for the original independent field tests were conducted in August 2006 and June 2007. The item data review of the 2010 independent biology field test was held in July 2010. The other administrations after 2007 used an embedded field-testing approach. For the embedded field tests, item data reviews were conducted in 2008 for social studies, in 2009, 2011, 2012, and 2013 for ELA, mathematics, science, and biology, and social studies, in 2014 for science/biology and social studies, and in 2015 for the science grade band 6–8 test. There were no field-test items in 2016. So no item data review meeting was held in 2016.

Development of Operational Task/Item Pool

- AIR once again reviewed all data associated with the tasks and items to determine whether the items were functioning as expected and were useful for measuring the achievement of students in South Carolina.
- Items that survived all reviews were placed into the operational task/item pool.

Design and Development of the 2006–2015 SC-Alt Field Tests

Following the task development process, the field-test forms were designed and produced. The primary purposes of the independent field-test administrations for ELA and mathematics (spring 2006), science (fall 2006), and social studies (spring 2007) were to produce data to evaluate SC-Alt tasks and items and to guide the assembly of operational test forms to be used in 2007 and beyond. Student scores based on field-test data were not reported.

An embedded field test (spring 2008) tested the symbolic version of the social studies task “George Washington” so that its performance could be compared with the text version used in the spring 2007 field test.

The design, data collection, and analysis of the independent 2006 and 2007 field tests in ELA, mathematics, science, and social studies, of the 2008 embedded social studies field-test tasks, of the 2009, 2011, 2012, and 2013 embedded field-test tasks in ELA, mathematics, science, and social studies, of the 2014 embedded field-test tasks in science/biology and social studies, and of the 2015 science grade band 6–8 test were discussed in the spring 2007, 2008, 2009, 2011, 2012, 2013, and 2014 operational technical reports. This technical report focuses on the design, data collection and analysis of the operational field test in science grade-band 6-8.

Development of the High School Biology Assessment

During spring 2010, concurrently with the operational SC-Alt administration, 21 new high school biology tasks were field-tested on 15- and 16-year-old students eligible for alternate assessment. The biology field test was administered to 472 students on two forms of 12 tasks each. The forms were linked by three shared tasks, which allowed all biology items to be calibrated on the same scale.

The item response theory (IRT) parameters, classical item statistics, and fit and differential item functioning (DIF) statistics were subjected to an item data review conducted with AIR and SCDE staffs on July 20, 2010. A standard setting workshop based on the biology field-test data was conducted on September 14 and 15, 2010. Biology had been administered operationally beginning with the spring 2011 assessment until the spring 2014 administration, and then the spring 2016 administration.

The Biology End-of-Course alternate assessment was not administered during the 2015 spring administration because the 2014 amendment to the EAA, required testing of students in grade 11 rather than grade 10 for accountability purposes. Students in grade 11 in 2015 had met the Biology End-of-Course requirement and therefore were not retested on the SC-Alt Biology End-of-Course assessment.

Use of the Student Placement Questionnaires

The SPQs are brief structured rating instruments that represent the range of communication levels and cognitive-academic functioning found in the population of alternate assessment examinees. AIR developed the SPQ for the SC-Alt program.

The student placement process is intended to achieve several important goals:

- It matches student achievement levels with the difficulty of the tasks and items that are administered.
- It allows a maximum number of student item responses at an appropriate level of difficulty.
- It minimizes fatigue by targeting the assessment to the student.
- It supports the psychometric rigor of student scores. A student is administered a better-targeted test than one that contains many items the student might find too easy or too difficult. Better test targeting contributes to better score reliability. Because fatigue effects from the student's limited attention span are reduced, the validity of the overall assessment is enhanced.

Teachers completed the SPQs in each content area to identify the most appropriate starting task for each student. For each subject, the SPQs prompted the teacher with 12–15 "can do" questions (e.g., can this student recognize the sun/moon/Earth?). The questions were grouped by major content standards and sampled across low-, moderate-, and high-complexity levels. Each question rated the student's functioning on a 4-point scale, valued 0 to 3. Answering the 12–15 questions of each SPQ, summing the total score, and identifying the most appropriate starting task in a lookup table took test administrators approximately six or seven minutes.

The lookup table identified ranges of SPQ scores that corresponded to one of three starting tasks. Teachers used the SPQs to assign students to starting points on the assessment. Cut points for the science and social studies SPQ were based on the rules derived for the mathematics and ELA SPQ but were altered for the number of items on the science SPQ. Details regarding the student participation, analysis, and conclusions drawn from use of the SPQ placement procedure appear below.

Administration: Placement and Stopping Rules

After teachers identified the most appropriate starting task for a student, they followed several rules as they administered the starting task and subsequent tasks. For 2016 tests, if starting at task 1, the teacher would administer at least six tasks; otherwise, at least seven tasks would be administered. Exhibit 2.1 lists the number of tasks that were used in 2016 final scoring. For detailed placement and stopping rules for the spring 2016 administrations, see Appendix A. Scoring is based on valid item responses for all items.

Exhibit 2.1. Number of Tasks Used in Scoring

Subject	Grade-Band	Starting Task	Tasks Used in Scoring
Science	4–5	Task 1–6	6
		Task 3–9	7
		Task 6–12	7
	6–8	Task 1–6	6
		Task 3–9	7
		Task 6–12	7
Biology	High School	Task 1–6	6
		Task 3–9	7
		Task 6–12	7
Social Studies	4–5	Task 1–6	6
		Task 3–9	7
		Task 6–12	7
	6–8	Task 1–6	6
		Task 3–9	7
		Task 6–12	7

SPQ Summary

The previous discussion describes some of the implementation procedures for the SPQ. Here we review two of the technical characteristics of the SPQ: the method used to select the SPQ-recommended starting task and the usefulness of the SPQ as an indicator of student starting task.

Usefulness of the SPQ for Determining the Starting Task. AIR has gathered information regarding the agreement between the SPQ-recommended start points and the final observed start points by reviewing item data following each operational administration. The results of the 2016 data are reported in detail in Chapter 8.

Use of the SPQ pre-assessment score is only the first step in the procedure used by the test administrator in determining where the student should start the assessment. The instructions for using the SPQ include procedures requiring teachers to adjust the starting point below the SPQ-recommended start point when the student is not successful on the first administered task. Alternately, after reviewing the assessment, some teachers may determine that a student needed to start at a higher level than recommended by the SPQ.

The results of the 2016 study indicate that the agreement between the SPQ-recommended start point and the observed start point by content area was about 93% for science and biology and 91% for social studies. Since the test administrator is required to make adjustments based on the student's success on the first task and these adjustments are reflected in the agreement rates, the SPQ appears to be working effectively for targeting the first task to begin the assessment process.

The results of the Start-Stop Analysis reported in Chapter 8 also support the effectiveness and validity of the SPQ and the SC-Alt tailored assessment design.

Teacher Scoring Accuracy

The design of the SC-Alt includes test administrator (teacher) scoring of student responses. The degree of accuracy with which the test administrator evaluates student performance determines whether the student receives the correct scores and the correct performance level.

A second rater study was conducted during the 2016 administration to confirm that test administrators were following all scoring procedures accurately. For this study, scoring accuracy refers to the degree to which teachers follow scaffolding and scoring directions correctly and assign correct scores to student responses. In the second rater study, scoring accuracy by the test administrators was evaluated by having another trained rater present during the test administration who scored the student responses simultaneously with the test administrator. After the raters concluded their scoring of the student responses, the consistency between the test administrators and the second rater observers was determined.

Detailed results of the scoring consistency analysis are presented in Appendix B. The results indicated that there was a high degree of consistency between the scoring of the test administrators and the second rater observers, suggesting that test administrators in South Carolina understood the scoring procedures and implemented them accurately when scoring student responses.

2016 Operational Test Booklets and Administration and Scoring Procedures

For each grade-band test form in science and social studies, tasks and items were selected that met the statistical criteria and that covered the breadth of the targeted Extended Standards. None of the 2016 forms include field-test tasks. All operational forms had their tasks ordered by increasing difficulty of the items in each task, which was determined by IRT analysis. The goal was to use technically sound assessment instruments to support valid inferences about what students know and can do relative to the Extended Standards in each content area.

The SC-Alt operational administration in spring 2016 included three sets of test materials: one for the grade-band 4–5 assessment, one for the grade-band 6–8 assessment, and one for high school assessment. Test administrators (teachers) received a *Test Administration Manual* (*TAM*) and comprehensive training based on the manual and the test materials.

Exhibit 2.2 lists the number of tasks of each task role in each 2016 spring operational form. It shows that the 2016 test booklets contained 12 operational tasks in test. Operational tasks are arranged in the order of the task empirical difficulties. Each task consisted of 4–8 items. Teachers were instructed to administer a minimum of 6–7 operational and operational field-test tasks for scoring to each student, depending on the SPQ-designated starting point, and to continue administration of subsequent tasks until the student was no longer successful or reached the end of the form.

Exhibit 2.2 Numbers of Operational and Operational-Field-Test Tasks in Each Grade-Band Assessment, 2016

Subject	Grade-Band	Total # of Tasks	Operational	Operational Field Test	Field Test
Science	4–5	12	12	0	0
	6–8	12	12	0	0
Biology	High School	12	12	0	0
Social Studies	4–5	12	12	0	0
	6–8	12	12	0	0

Teachers also received these other materials with each test booklet:

- Physical manipulatives;
- Printed manipulatives;
- An answer folder for each participating student; and
- A SPQ and directions for determining the starting task for each student (included in the answer folder).

The approximate operational form length for each grade-band assessment for the 2016 administration is 60 items (12 tasks times an average of 5 items per task) and 120 score points (60 items times an average of 2 points per item).

Linking Tasks in Each Grade-Band Assessment

All tasks in each SC-Alt grade-band assessment are aligned to the extended standards in that grade-band. Because adjacent grade-band score scales were linked psychometrically, some tasks were used as linking tasks in each grade-band assessment that aligned with the extended standards in both adjacent grade-bands in previous years. All items in linking tasks were designed to be appropriate for students in both adjacent grade-bands. Since vertical scales have been well established over the years, no linking tasks exist in the 2016 forms.

Chapter 3: Spring 2016 Operational Test Administration

This section describes the spring 2016 operational test administration in the following areas:

- Student participation for the spring 2016 administration;
- Demographics of participating students;
- Test administration window, materials, and timelines;
- Test administrator requirements;
- Test administrator training;
- Pre-assessment using the SPQ ;
- Fidelity of administration and accuracy of scoring; and
- Test security provisions.

Student Participation for the Spring 2016 Administration

Students participating in the spring 2016 operational administration were those students whose IEP team had determined that they met the following SC-Alt participation criteria for alternate assessment and who were ages 9–13 or 16 on September 1, 2015. These are the ages of typical students who are in grades 4–8 and 11.

- The student demonstrates a significant cognitive disability and adaptive skills that result in performance substantially below grade-level achievement expectations even with the use of accommodations and modifications.
- The student accesses the state-approved curriculum standards at less complex levels and with extensively modified instruction.
- The student has current adaptive skills requiring extensive direct instruction and practice in multiple settings to accomplish the application and transfer of skills necessary for application in school, work, home, and community environments.
- The student is unable to apply or use academic skills across natural settings when instructed solely or primarily through classroom instruction.
- The student's inability to achieve the state grade-level achievement expectations is not the result of excessive or extended absences or social, cultural, or economic differences.

Exhibit 3.1 indicates the age ranges of students who participated in the SC-Alt in spring 2016.

Exhibit 3.2 indicates the alternate assessment eligibility categories that were placed in each eligible student's state precoding file (precoding files enabled SCDE and AIR to ensure that the appropriate SC-Alt materials were delivered to teachers in time for the spring 2016 administration).

Exhibit 3.1: Age Reference Sheet for Spring 2016 Operational Administration

	Corresponding Birth Date Range	
Age as of 9/1/15	**Beginning DOB**	**Ending DOB**
5	9/02/09	9/01/10
6	9/02/08	9/01/09
7	9/02/07	9/01/08
8	9/02/06	9/01/07
9	9/02/05	9/01/06
10	9/02/04	9/01/05
11	9/02/03	9/01/04
12	9/02/02	9/01/03
13	9/02/01	9/01/02
14	9/02/00	9/01/01
15	9/02/99	9/01/00
16	9/02/98	9/01/99
17	9/02/97	9/01/98
18	9/02/96	9/01/97
19	9/02/95	9/01/96
20	9/02/94	9/01/95
21	9/02/93	9/01/94

Exhibit 3.2: Precode Project Coding

Data File Code	Full Description	Dropdown List Description
N, blank	N – No (not eligible for alternate assessment)	N – No
Y*	Y – Yes (eligible for alternate assessment)	Y - Yes

*For the 2016 administration, the SCDE calculated the age of students who were marked Y as eligible for alternate assessment to determine the students' age-based grade and what grade band test, if any, the student should receive.

Demographics of Participating Students

This section describes the demographics of participating students by test form (elementary, middle school, or high school).

For the purpose of this report, the inclusion of students was based on the same criteria applied in the reporting of student scores. A student was included if the following criteria were met: (1) a signed security affidavit was received for the student, (2) the student was not noted to be excluded from reporting for some other reason (e.g., inappropriate administration procedures), and (3) the number of coded responses met the attemptedness requirement for student scoring (i.e., 23 valid responses) in at least one content area. The population of students reported,

therefore, includes 1,073 elementary school students, 1,575 middle school students, and 390 high school students.

According to the attemptedness requirements, a student's responses to a test form could be assigned to one of three completion status categories: completion ("student satisfied attemptedness rule"), not tested due to blank answer booklet or missing security affidavit, or invalid due to fewer than 23 valid responses. For all tests in spring 2016, 99% or more of students completed their tests.

Exhibit 3.3 lists the disability codes that were reported through Precode for students assessed with the SC-Alt. Multiple codes are reported for students in the student database for purposes of funding. Therefore, many SC-Alt students have multiple disability codes, indicating primary and secondary disabilities, and supplemental services. For example, many students with cognitive disability codes also receive speech services and carry a speech/language disability code. For reporting purposes, a coding system is used to designate a student's primary disability by giving precedence to cognitive disability classifications and other primary disability codes.

In the exhibit, the "Precedence" column indicates the precedence of the disability in the coding system to decide students' primary disabilities: the smaller the indicator, the higher the precedence of the code when two or more codes are reported. For example, if the code for Profoundly Mentally Handicapped (PMD) is indicated in the data, the student's primary disability will be reported as PMD no matter what other disability types are indicated. Further, higher precedence codes override lower precedence codes. For instance, if both autism and orthopedically handicapped are indicated, a student's primary disability will be reported as autism.

Students with the primary disabilities of severe intellectual disability, moderate intellectual disability, mild intellectual disability, and autism made up 81% to 90% of the students assessed with the SC-Alt. The rates of severe intellectual disability (profound mental disability), moderate intellectual disability (trainable mental disability), mild intellectual disability or educable mental disability), and autism stayed about the same (5%–11%, 21%–35%, 20%–31%, and 21%–28%, respectively).

Exhibit 3.4 presents the student demographics for participating students in each grade-band. The proportion of demographic characteristics of the student population was relatively consistent across grade-bands. In terms of ethnicity, African American students made up 47%–51% of the assessed students across grade-bands; white students accounted for 35%-43% of the students across grade-bands; and Hispanic students accounted for 5%-10% of students across forms. Other ethnicities each accounted for less than 5% of the assessed population. Gender was also consistent across grade-bands with approximately a two-to-one ratio of male students (65%-68%) to females (32%-35%).

The classification of students in terms of English language proficiency (ELP) was also consistent across grade-bands. The majority of students (92%-96%) were classified as "English Speaker II," meaning that they had never been coded as an ESL student. The remaining language proficiency classifications each accounted for less than 1.5% of students by grade-band with the exception of "pre-functional" (3%-5%), indicating that the student scored pre-functional on the ELP assessment and was receiving English as a second language (ESL) services.

The grade reported for a student in the school's database is the grade reported for funding purposes—the Education Finance Act (EFA) grade—and is often determined by the location of the student's educational program instead of by the student's age or years in school. Therefore, approximately 15% of students administered the elementary form (for students ages 9 and 10, the typical ages of students in grades 4 and 5) had reported EFA grades lower than grade 4 or higher than grade 5, with most of these students classified in the adjacent grades of 3 and 6. Of students administered the middle school form (for students ages 11–13, the typical ages for grades 6–8), 15% of the students were reported at grades below grade 6 or above grade 8. The vast majority of these students were classified as grade 5 students (11% of all middle school form students), which indicates that these students were being served in educational programs housed in elementary schools. The purpose of assigning SC-Alt grade-band forms by age is to ensure that students are instructed and assessed on the appropriate grade-band curricula regardless of where their educational programs are housed. About 9% of students who took the high school form (for students ages 14-16, the typical ages for grades 9-11) had reported EFA grades lower than grade 9 or higher than grade 11, of which approximately 5% of these students were classified as grade 8.

The percentage of students receiving free lunch or reduced price meals at schools increases slightly across forms (free lunch: 18% to 29%; reduced: 0% to 3%). One elementary student was indicated as being a migrant student. Twenty elementary school (2%) students were indicated as being homeschooled, as were 15 middle school students (1%) and 11 high school students (3%). Eleven elementary school students (1%) were indicated as being medically homebound, as were 25 middle school students (2%) and 4 high school students (1%).

Exhibit 3.3: Primary Disability Code for State Funding Purposes

Precedence	Indicated Student Disability	Primary Disability Code
1	Profoundly Mentally Handicapped	PMD
2	Trainable Mental Disability	TM
3	Educable Mentally Disability	EM
4	Autism	AU
5	Developmental Delay	DD
6	Learning Disability	LD
7	Emotional Handicapped	EH
8	Traumatic Brain Injury	TBI
9	Other Health Impaired	OHI
10	Orthopedically Handicapped	OH
11	Visually Handicapped	VI
12	Hearing Handicapped	HH
13	Speech	SP
14	Deaf/Blindness	DB
15	Multiple Disable	MD
99	<<None>>	<<Blank>>

Exhibit 3.4: Summary of Demographic Information

	Elementary School		Middle School		High School	
	N	%	N	%	N	%
STUDENT'S ETHNICITY						
American Indian or Alaska Native	2	0.19	5	0.32	2	0.51
Asian	7	0.65	24	1.52	5	1.28
Black or African-American	547	50.98	745	47.3	184	47.18
Double-bubbled	.	.	.	.	.	.
Hispanic or Latino	101	9.41	118	7.49	20	5.13
Native Hawaiian or Other Pacific Islander	1	0.09	.	.	2	0.51
Other	.	.	.	.	.	.
Two or More Races	31	2.89	46	2.92	11	2.82
Unknown	.	.	.	.	.	.
White	384	35.79	637	40.44	166	42.56
STUDENT'S GENDER						
Female	352	32.81	534	33.9	136	34.87
Male	721	67.19	1041	66.1	254	65.13
Unknown	.	.	.	.	.	.
ESL (LANGUAGE)						
Advanced	2	0.19	.	.	.	.
Beginner	12	1.12	14	0.89	.	.
English Speaker II–Native English speaker	997	92.92	1475	93.65	372	95.38
English Speaker I	.	.	3	0.19	1	0.26
Initially English Proficient	.	.	1	0.06	1	0.26
Intermediate	3	0.28	3	0.19	.	.
Intermediate—Waiver	.	.	1	0.06	.	.

	Elementary School		Middle School		High School	
	N	%	N	%	N	%
Pre-functional	53	4.94	64	4.06	14	3.59
Pre-functional—Waiver	1	0.09	6	0.38	1	0.26
Student missed annual ELD assessment	4	0.37	6	0.38	.	.
Unknown	1	0.09	2	0.13	1	0.26
ELIGIBLE FOR FREE OR REDUCED-PRICE LUNCH						
Free Meals	203	18.92	334	21.21	110	28.21
Reduced	7	0.65	18	1.14	11	2.82
Full-Pay Meals	863	80.43	1223	77.65	269	68.97

	Elementary School		Middle School		High School	
	N	%	N	%	N	%
EFA GRADE (REPORTED GRADE FOR FUNDING)						
2	2	0.19	.	.	.	.
3	137	12.77	6	0.38	.	.
4	542	50.51	26	1.65	.	.
5	375	34.95	177	11.24	4	1.03
6	13	1.21	525	33.33	.	.
7	1	0.09	519	32.95	3	0.77
8	1	0.09	300	19.05	19	4.87
9	.	.	13	0.83	52	13.33
10	.	.	5	0.32	123	31.54
11	.	.	1	0.06	181	46.41
12	.	.	.	.	5	1.28
99	2	0.19	3	0.19	3	0.77
COMPLETION STATUS: Science						
Attempted	1068	99.53	1571	99.75	390	100
Not Tested	3	0.28	2	0.13	.	.
Test Not Valid: Student received fewer than 23 scored responses	2	0.19	2	0.13	.	.
COMPLETION STATUS: Social Studies						
Attempted	1069	99.63	1570	99.68	.	.
Not Tested	3	0.28	2	0.13	390	100
Test Not Valid: Student received fewer than 23 scored responses	1	0.09	3	0.19	.	.
Special Status						
Migrant Status	1	0.09	.	.	.	.

	Elementary School		Middle School		High School	
	N	%	N	%	N	%
Home Schooled	20	1.86	15	0.95	11	2.82
Medical Homebound	11	1.03	25	1.59	4	1.03
STUDENT PRIMARY DISABILITY						
Unknown	.	.	.	.	.	.
Autism	299	27.87	432	27.43	83	21.28
Deaf-Blindness	1	0.09	.	.	.	.
Developmental Delay	50	4.66	2	0.13	.	.
Emotional Disability	3	0.28	10	0.63	2	0.51
Mild Mental Disability	290	27.03	480	30.48	81	20.77
Deaf/Hard of Hearing	5	0.47	11	0.7	5	1.28
Learning Disability	19	1.77	22	1.4	5	1.28
Multiple Disabilities	8	0.75	6	0.38	4	1.03
No Disability	4	0.37	1	0.06	1	0.26
Orthopedic Impairment	12	1.12	21	1.33	14	3.59
Other Health Impairment	54	5.03	77	4.89	14	3.59
Severe Mental Disability	59	5.5	105	6.67	41	10.51
Speech/Language Impairment	16	1.49	7	0.44	1	0.26
Traumatic Brain Injury	9	0.84	8	0.51	1	0.26
Moderate Mental Disability	231	21.53	388	24.63	136	34.87
Visual Impairment	13	1.21	5	0.32	2	0.51
TOTAL	1073	100	1575	100	390	100

*Not all students were required to complete the science and social studies subject areas.

Test Administration Window, Materials, and Timelines

The spring 2016 administration of the SC-Alt included the following important dates:

- SC-Alt test administration training for teachers new to the SC-Alt operational administration (did not administer in 2014 or 2015), five regional SCDE workshops: January 25–29, 2016
- District-level SC-Alt test administration training for all test administrators: February 8–March 4, 2016
- Test materials arrived in district: February 26, 2016
- Assessment window: March 7–April 22, 2016
- Deadline for test administrators to return materials to the District Test Coordinator for Alternate Assessment (DTC-Alt): April 27, 2016
- Materials received by contractor: April 29, 2016

Teachers had approximately eight weeks to review the materials and complete the test administration. Teachers received both printed and physical manipulatives to use during test

administration. They were also responsible for collecting a few common classroom items that were familiar to the student to use with several tasks.

Test Administrator Requirements

Test administrators were required to receive training on all phases of the administration of the SC-Alt and had to be one of the following:

- A certified employee of the district
- An employee of the district who is a critical needs teacher and has a letter of eligibility, an interim certificate, or a critical needs certificate
- A substitute teacher who is certified and employed by the district on an as-needed basis
- Someone who was a certified teacher but has allowed the teaching certificate to expire owing to retirement, change of career, or some other reason and has been approved by the DTC-Alt as a qualified test administrator
- Someone who is not certified but has been employed by the school district in an instructional capacity and has been approved by the DTC-Alt as a qualified test administrator

If a test was administered in a location other than the school, the test administrator still had to meet the criteria specified above.

Test Administrator Training

Test administration training was required for all test administrators. The SC-Alt is individually administered with a standard script and scored by the test administrator as the assessment is being conducted. Fidelity of administration and scoring is essential to the validity of the assessment results.

Teachers who administered the SC-Alt during spring 2016 but who did not administer the SC-Alt in spring 2014 and 2015 were required to attend a SCDE training session. In addition, all teachers who administered the SC-Alt in spring 2016, including those who attended the SCDE workshops, were required to attend a district-level SC-Alt administration training session conducted by the DTC-Alt. At the completion of the training sessions, each test administrator was required to sign and submit to SCDE an acknowledgment of receiving training and readiness to conduct the assessment.

The training included the following elements:

- Review of the eligibility criteria for students participating in the alternate assessment;
- Overview of the Extended Standards, emphasizing the link to the general education standards;
- Explanation of how the assessment was developed, including the role of the review committees;
- Review of test administrator requirements, test security, and test materials;
- Training and practice in pre-assessment using the SPQ;
- Description of the assessment format and procedures:

  - Setup
  - Script
  - Scoring
  - Adaptive instructions;
- Instruction for making SC-Alt tasks accessible;
- Overview of assistive technology and the alternate assessment;
- Administration and scoring instruction and practice using released test items provided on video clips of South Carolina teachers administering a task to students representing a variety of disabilities and ethnicities;
- Scoring qualifying round; and
- Review of procedures for receiving and shipping materials back to the DTC-Alt.

Pre-Assessment Using the Student Placement Questionnaire

As noted earlier in this Technical Report, the SC-Alt uses the SPQ as a pre-assessment instrument to determine the most appropriate starting point in the assessment. Recall that the SPQ requires the teacher to evaluate the student on 12–15 "can do" statements addressing the student's skills and knowledge in each content area on the basis of the teacher's prior instructional knowledge of the student. A total score computed from the teacher's SPQ responses indicates the initial starting task for the assessment. Once the assessment has begun, the test administrator is required to adjust the starting point for the student if the student is not successful on the first task. Rules have been established for adjusting the starting tasks and for determining when the assessment should be concluded. The starting and stopping rules used with the SPQs for the 2016 administration are presented in Appendix A.

Fidelity of Administration and Accuracy of Scoring

During the assessment administration for social studies, a monitor had to be present to observe all assessment sessions and verify the use of proper assessment procedures and the authenticity of student responses. Monitors had to be trained, and they had to sign a Test Administrator Security Affidavit to verify that the appropriate procedures were used. The Test Administrator Security Affidavit is located in the answer folder and includes the principal's verification of the use of appropriate assessment and scoring procedures. Whenever the requested signatures were missing, the administration was considered an invalid administration.

The social studies assessments (6% for elementary and middle schools, 12% for high schools) were audited by having trained raters score the student's performance independently, while witnessing the administration directly. The results of these studies are reported in detail in Appendix B.

Test Security Provisions

This section describes the test security procedures associated with the SC-Alt. SCDE has the following test security measures in place:

- Each local school board must develop and adopt a district test security policy. The policy must provide for the security of the materials during testing and the storage of all secure tests and test materials before, during, and after testing. Before and after testing, all materials must be stored at a location(s) in the district under lock and key.
- Each district superintendent must designate annually one individual in each district for each mandated assessment who will be the sole individual in the district authorized to procure test instruments that are used in testing programs administered by or through the State Board of Education. The designated individual for alternate assessment is the DTC-Alt. The DTC-Alt is responsible for receiving and distributing all SC-Alt materials and ensuring that all SC-Alt administration procedures and requirements are met.
- All school and district personnel who may have access to SC-Alt test materials or to the location in which the materials are securely stored must sign the Agreement to Maintain Test Security and Confidentiality before they are given access to the materials.
- Test administrators must be trained annually to administer the SC-Alt and must meet all test administrator requirements.
- An assessment monitor must observe all assessment sessions and verify the use of proper assessment procedures and the authenticity of student responses for each completed assessment.
- Test administrators must complete an SC-Alt Test Administrator Security Affidavit for each student they assess.

Chapter 4: Performance Standards

As a reference, performance-level cut points are reproduced in Exhibit 4.1.

Exhibit 4.1: SC-Alt Performance-Level Cut Scores on Scale Score Metric

	Elementary School (ES)	Middle School (MS)	High School (HS)
Science/Biology			
Level 1	—	—	—
Level 2	430	447	408
Level 3	469	489	484
Level 4	496	514	519
Social Studies			
Level 1	—	—	—
Level 2	423	439	—
Level 3	492	503	—
Level 4	549	560	—

The procedures for setting these performance standards and an analysis of the 2011 operational impact data of the high school biology standards were summarized in Chapter 4 of the SC-Alt spring 2011 operational and field test administration *(American Institutes for Research and South Carolina Department of Education*, 2011) and are not reproduced in this volume. Detailed reports of the SC-Alt standard settings can be found in the *SC-Alt Spring 2007 Standard Setting Technical Report* (American Institutes for Research, 2007) and *South Carolina Alternate Assessment 2010 Standard Setting: Setting Standards in High School Biology Technical Report* (American Institutes for Research and South Carolina Department of Education, 2010b). Readers interested in the SC-Alt standard setting procedures are referred to these sources.

Chapter 5: Technical Characteristics and Interpretation of Student Scores

No field test items were included in the 2016 forms. In order to provide a complete description of the technical characteristic of the 2016 assessment, this chapter reports the item analysis results from previous years (see AIR and SCDE's SC-Alt operational and field-test administration reports for 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015). The reported analyses are intended to ensure the quality of the items, the assessment materials and instruments, and the score reporting scales as measures of state academic standards.

As a reminder to the reader, each test has three potential starting tasks that correspond to three levels of task complexity (low, moderate, and high). Students are assigned to a starting task on the basis of teacher judgments recorded in the SPQ for each content area.

Analysis and Scaling of Items, Tasks, and Test Forms

The science and social studies assessments underwent comprehensive psychometric analyses, including initial item calibrations, after their earlier field testing. Final calibrations were estimated for the science content area on the basis of operational data gathered during the spring 2007 operational administration; final calibrations for social studies were computed from operational data from the spring 2008 administration. Calibrations based on operational data were considered superior to those based on field-test data. The vertical scales were also defined using the linking tasks as the vehicle that connected the elementary and middle school forms.

AIR calibrated the items, estimated examinee proficiencies, and calculated scale scores and achievement levels for operational forms. This process entailed examining item statistics to ensure quality measurement across the range of the assessment, calibrating the items within each content area to a common scale, and then applying a maximum-likelihood scoring algorithm to each student's responses to estimate his or her proficiency scores and assign the correct achievement level.

Assignment of Examinees to Starting Tasks and Item Calibration and Test Forms Linking

All eligible students participated in the spring 2016 test administrations. The sample sizes of approximately 1,073 students in elementary, 1,575 in middle school, and 390 in high school per content area, enabled effective calibration across task starting points and grade-bands. Students were assigned to one of three starting points on the basis of the sum of the teacher responses on the SPQ. The SPQ cut scores were shown to correlate with student achievement scores on the 2006 field-test administrations. For details, see AIR's SC-Alt spring 2007 operational administration report (American Institutes for Research, 2008). The assignment of student starting tasks based on the SPQ cut scores was intended to expose students to items that were ideally suited to their current level of achievement while ensuring that (a) each student responded to an adequate number of items so that reliable and content-valid proficiency scores could be estimated and (b) an adequate number of students responded to each item for the joint calibration to be reliable.

Teachers were instructed to administer all tasks associated with the assigned starting point, with provisions for dropping to a lower starting point (task) if the student was unable to respond to the items in the task at the assigned starting point. Students who were assigned to high and moderate levels of the assessment but were unable to respond to items in the tasks at those levels may have been moved back to a less difficult starting point.

The linking design allowed a joint (concurrent) calibration of all items within a content area and the placement of the items on a common difficulty scale. The tasks actually used to link the grade-band forms (linking tasks) were selected, in part, on the basis of their moderate difficulty levels. Moderately difficult tasks contribute to more stable linking across levels than tasks that may be either too easy or too difficult for the examinees. Linking across grade-band forms was accomplished by using common tasks across grade-bands. Some of the tasks from the elementary form were on the middle school form; some of the tasks from the middle school form were on the high school form.

Since vertical scales have been well established over the years, no linking tasks exist in 2016 forms.

Analysis Plan

AIR's analyses presented in the remainder of this chapter were conducted in five steps:

1. Data preparation and quality control;
2. Classical item analysis;
3. Review of items not meeting psychometric criteria for inclusion on operational forms;
4. Joint calibration of items according to the Rasch model; and
5. Final achievement estimation and scale score calculation for operational forms.

Data Preparation and Quality Control

Before analyzing the operational test data, AIR psychometricians performed a number of quality control procedures to ensure that scanning operations resulted in accurate data capture of the teacher-recorded student responses. Prior to the test administration, AIR verified all of the point values for each form's answer folder. For each form, two AIR staff members independently verified the possible responses and point values for each item.

After receiving the scanned test data, AIR analysts carefully examined the data file to verify its accuracy. Descriptive statistics were computed to ensure that student case counts on the pre-identification file generally corresponded to the actual counts based on test data at the state, school, and classroom levels. In addition, AIR verified that the total number of items in the data file matched the number of items on the answer folder and in the test booklet and then examined the frequency distributions of item responses to identify potential scoring problems, such as out-of-range values or unused response categories.

For purposes of item analysis and student scoring, respectively, non-response (NR) data were treated in two different ways:

For *item analysis and calibration purposes*, a student had to have at least three scored responses for the testing attempt to be considered valid. For a response to be considered a scored response, the test administrator had to have assigned a numeric score (0–4) to the student's response. If the administrator scored NR for all items in a task, the task was treated as not administered, and NR values were recoded as missing.

For *operational scoring* of student responses and estimation of student proficiency, however, the NR codes were treated as indications that the item was administered and that the student did not possess the content area knowledge and skill to respond. In this case, all NR values were recoded as zeroes and included in the student proficiency estimates. Following this recoding, tests were reexamined to determine the number of scored responses (0–4) in each content area. For operational scoring, a student had to have at least 23 scored responses of any kind for the assessment to be considered a valid attempt within a content area.

After the accuracy of the data file was verified, classical item analyses and IRT analyses were performed. Several quality control procedures were taken to ensure the accuracy of these analyses.

As an initial step, two data analysts checked the program control file to ensure that form layout was correctly specified and that item response values were correct. As a second step, two analysts independently performed all analyses. Results of the parallel analyses were compared for mistakes by using commercially available file comparison software. Last, the analysis results were spot-checked by using other commercially available statistical software to ensure that the results were consistent across statistical software packages. *These comprehensive quality control steps are highly effective in detecting any issues that might influence the interpretation of the item analysis results.*

Classical Item Analysis

Classical item analysis for the SC-Alt operational and field-test forms was conducted using the *AM* statistical software (http://am.air.org). The item analysis yielded the proportion of students in each response category, the percentage of omitted responses for that item,[1] and the proportion of students who were unable to respond to the item because of access limitations (where relevant). Correlations between the item score and the test score were computed using adjusted polyserial correlations. For purposes of calculating item statistics, omitted items were treated as incorrect when there was at least one scored response within the same task (see above). Minimum- and maximum-point values, average item scores, and adjusted item-total polyserial correlations were calculated for all items.

Test form statistics, such as internal consistency reliability estimates and standard error of measurement statistics, were suppressed at this point because all students were not expected to take all items. Such statistics would be misleading before Rasch scoring was applied. Special marginal reliability analyses used to determine the reliability of the student score estimates are described in a later section of this chapter.

[1] An item was considered omitted if no response was recorded for the item (or the test administrator marked NR on the student score sheet), but the student responded to subsequent items on the task.

The proportion of students in each score-point category was calculated as defined by the item's scoring guidelines, as well as the proportion of students with blank responses within attempted tasks (i.e., those with at least one scored response). Item difficulty was computed as the mean score on the item across all students taking the form and with a scored response on that item. The average proportion of total points, calculated as the mean score divided by the total number of points possible on the item, serves as an additional measure of item difficulty.

Review of Items Not Meeting the Specified Psychometric Criteria

Classical item analysis provided information about the technical quality of the items; items failing to meet specified psychometric criteria were flagged for subsequent review. During field testing of ELA and mathematics (spring 2006), science (fall 2006), and social studies (spring 2007), AIR reviewed all flagged items in concert with SCDE to determine whether they were of sufficient psychometric quality. For the 2007 operational forms in ELA, mathematics, and science and for the 2008 operational form in social studies, AIR conducted a statistical review of the items to determine whether any operational items were performing in an unacceptable fashion. For the spring 2009 operational SC-Alt administration, AIR subjected all embedded field-test items in ELA, mathematics, science, and social studies to an item data review. The spring 2010 operational SC-Alt administration contained only operational items in ELA, mathematics, science, and social studies. Items from the 2010 spring independent field test in high school biology were subjected to similar analyses as with previous field tests. The 2011 and 2012 administration utilized embedded field-test design in ELA, mathematics, science, and social studies, plus operational field-test tasks in science. The 2013 administration used embedded field-test tasks in all subjects, plus operational field-test tasks in ELA, math, and social studies. The 2014 administration contained only operational tasks in ELA and Mathematics, and operational field-test tasks and field-test tasks in science and social studies. The 2015 administration used one embedded operational field-test task in the science middle school form, and contained only operational tasks in all the other forms of science and social studies.

Item Response Theory Calibration and Linking Test Forms

This section describes AIR's procedures for item calibration using IRT techniques. Item parameters were estimated using the Partial Credit Model (Masters, 1982) approach available using Winsteps software. A common item design anchored on operational items was used in calibration.

The descriptive statistics of scale scores from 2016 tests are included in Exhibit 5.1 and Exhibit 5.2. It is interesting to note that the mean scores show a general upward trend from elementary to middle school levels. Biology is on a different scale. This indicates that a vertical scale is a useful way to describe the results of this population of students. In addition, in each test, a few students were at the floor (minimum scale score equal to 260) and the ceiling (maximum scale score equal to 740) of the test.

Exhibit 5.1: Scale Score Statistics by Grade-Band Test

Subject	Statistic	Elementary School	Middle School	High School
Science	N	1068	1571	390
	Mean	506.79	510.88	492.18
	SD	63.12	61.09	101.49
	Min	260	260	260
	Max	740	740	740
Social Studies	N	1069	1570	.
	Mean	502.75	517.11	.
	SD	62.97	62.44	.
	Min	260	260	.
	Max	706	740	.

Exhibit 5.2: Scale Score Statistics, by Grade-Band Test, by Primary Disability

		Elementary School				Middle School				High School			
Subject	**Statistic**	**Severe Mental Disability**	**Moderate Mental Disability**	**Mild Mental Disability**	**Autism**	**Severe Mental Disability**	**Moderate Mental Disability**	**Mild Mental Disability**	**Autism**	**Severe Mental Disability**	**Moderate Mental Disability**	**Mild Mental Disability**	**Autism**
Science	N	59	230	288	298	105	388	478	430	41	136	81	83
	Mean	406.41	488.23	539.37	504.92	412.33	499.16	542.58	505.25	373.66	483.05	563.26	481.28
	SD	82.53	56.9	41.45	45.95	78.86	46.77	40.06	48.41	73.43	83.6	75.53	92.35
	Min	260	260	428	260	260	260	270	260	260	260	395	260
	Max	504	679	740	679	581	664	701	740	469	700	740	738
Social Studies	N	59	230	290	296	104	387	480	431	0	0	0	0
	Mean	399.32	484.11	533.5	501.3	419.45	503.2	549.25	511.97	.	.	.	.
	SD	81.39	55.46	40.51	48.64	83.58	45.59	47.23	47.17	.	.	.	.
	Min	260	260	407	260	260	260	301	260	.	.	.	.
	Max	502	669	706	706	598	656	740	740	.	.	.	.

The SC-Alt implements vertical scaling of the assessments, permitting the measurement of student progress on the state content standards over time. Such a scale can provide educators and parents with useful information for monitoring student performance as students move through grades over time.

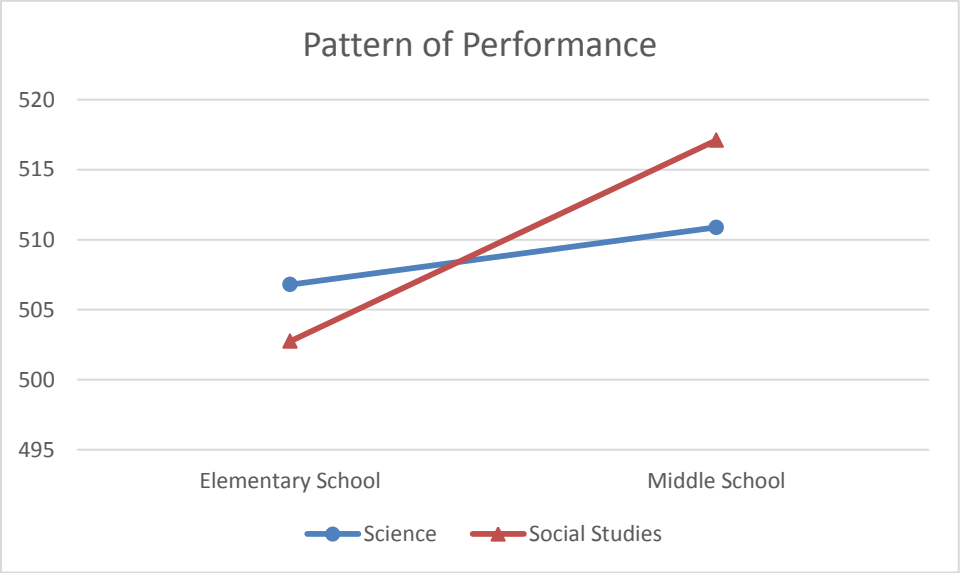
The development of this scale required the use of a common item linking design. In a common item design, *linking item tasks* appear on two adjacent grade-band forms of the assessment. These linking items allow for the grade-band scales to be connected, thus establishing the vertical scale.

There are at least two features of this linking design and the use of grade-level forms that warrant clarification. First, the linking items are the same (i.e., they are the same items) between two grade-band forms. They are connected to grade-specific standards in the higher grade as well as in the lower grade. As a result, students are not exposed to off-grade-level content since the common items serve a dual purpose in measuring content in both grade-bands. Second, even though some items on each grade-band form are administered for two or three years before replacement, it is not likely that exposure of the items to the students would trigger responses based on the recollection of any item's administration the previous year. As students grow academically, their starting task will likely change each year. New starting tasks mean that a portion of the items any student receives will be unique each year. New task development allowed a field-test task to be placed on the 2016 science grade band 6–8 form. The field-test task will then be possibly placed on the future forms as operational tasks, provided that enough of their items passed the 2016 item data review.

The linking design was changed for the 2011 forms and further changes in the use of linking tasks were made in the 2012 and future forms. Vertical linking tasks were discontinued for the elementary and middle school science tests. In 2016 forms, no linking tasks exist.

A graph of the overall pattern of performance for 2016 on the vertical scale is shown in Exhibit 5.3. Again, there is a general upward trend from elementary to middle school grade-bands in each of the two subject areas. This graph shows that the vertical scale in the SC-Alt was successful at capturing growth across grade-bands.

Exhibit 5.3: Overall Pattern of Performance on the Vertical Scale



Using Item Responses to Estimate Student Proficiency

The section describes the estimation procedures used to determine student proficiency based on the items administered, the transformation of proficiency estimates on the Rasch theta scale into scale scores, and the relation of achievement estimation to reliability estimation.

Student proficiency scores were estimated using a maximum-likelihood approach based on the scored items for each student. This method calculates the theta score that maximizes the likelihood function of the given item responses for each student. Comparable scale-score estimates from these different item responses were achieved through the measurement-invariance property of IRT ability estimates, even when students were exposed to different ranges of items.

Under the Rasch-based IRT model, there is a one-to-one correspondence between the estimated theta score and the total raw score for a specific set of items. However, in the SC-Alt, each student can take different sets of items. Using the pattern scoring method for calculating theta scores, AIR ensured that (a) two students who took the same items and achieved the same item scores were assigned the same theta score, and (b) students who took more difficult items were assigned higher theta scores than students with the same raw scores who took less difficult items. Thus, the scoring method took into account both the number of raw score points the student achieved and the difficulties of the items the student responded to. This scoring process was performed separately for each content area.

Once theta values had been estimated for each student, AIR converted the theta estimates to scale scores using a scale metric determined by SCDE in consultation with AIR. The SC-Alt in ELA, mathematics, science, and social studies were scaled to have a mean of 500 and a standard deviation of 80 on the vertical scale for the grade-band 6–8 assessment. The grade-band 4–5 mean and standard deviation were calculated in relation to the grade-band 6–8 mean and standard deviation. This was done by performing a linear transformation of the Rasch theta scale

for each content area, fixing the mean of the middle school test form scale at 500, and multiplying the student's theta deviation score by 80 as shown in the formula below:

$$y_{ijk}^{*} = 500 + (\frac{\hat{\theta}_{ijk} - \hat{\mu}_k}{\hat{\sigma}_k}) * 80,$$

where

i indexes student;

j indexes grade-band;

k indexes content area;

y_{ijk}^{*} is the scale score for student *i* in grade-band *j* and content area *k*, given estimated ability, $\hat{\theta}_{ijk}$;

$\hat{\mu}_k$ is the content-area-specific mean for the middle school test form; and

$\hat{\sigma}_k$ is the content-area-specific standard deviation for the middle school test form.

A similar linear transformation of Rasch theta scale was done for SC-Alt biology assessment, fixing the mean of form scale at 503.488764 and the standard deviation at 84.5495264. The $\hat{\mu}_k$ is the mean theta estimates and $\hat{\sigma}_k$ is the standard deviation of theta estimates for the high school biology test form.

SCDE also decided to truncate the scale score ranges so that the lowest possible scale score was 260 and the highest possible scale score was 740. Student scale-score estimates were truncated to the smallest whole integer (e.g., an estimated scale score of 440.60 would become 440). Additionally, scale scores were calculated and checked using a method similar to the process for total raw data.

Once scoring was completed, it was possible to estimate the internal consistency score reliability of the grade-band assessments by estimating the marginal measurement error across students. These estimates produced different standard errors for each student, depending on the items they were given and their level of performance on those items. This value was used to determine the score reliability as the proportion of true score variance to observed score variance. We estimated this value within each content area (a) across the entire theta scale, (b) across grade-band forms, and (c) for each starting point within a grade-band.

Test Score Reliability

This section provides the marginal reliability for each grade-band, content area, and group of students beginning at each starting task determined by the SPQ for the spring 2016 administration.

Classical test theory-based reliability indices, such as Cronbach's alpha, were not appropriate for the SC-Alt because the length of the test and the subset of items differed for each student. The reliability coefficient for the SC-Alt was, therefore, calculated as the *marginal reliability* (Sireci, Thissen, & Wainer, 1991), which is equivalent in interpretation to classical internal consistency estimates of reliability.

First we determined the marginal measurement error variance, $\bar{\sigma}^2_{e^*}$, across all examinees with a score strictly between the score limits of 260 and 740:

$$\bar{\sigma}^2_{e^*} = \int \sigma^2_{e^*} p(\theta) d\theta = \frac{\sum \sigma^2_{e^*}}{N},$$

where $\bar{\sigma}^2_{e^*}$ is the square of the standard error of student ability estimate, $\hat{\theta}$. Thus, the marginal measurement error variance could be estimated as the average of squared standard error of $\hat{\theta}$.

Then we estimated the marginal reliability as

$$\bar{\rho} = \frac{\hat{\sigma}^2_{\theta} - \bar{\sigma}^2_{e^*}}{\hat{\sigma}^2_{\theta}},$$

where $\hat{\sigma}^2_{\theta}$ is the variance of observed θ estimates.

The marginal reliability estimate, $\bar{\rho}$, can be interpreted similarly to classical reliability indices such as Cronbach's alpha. Extreme scores, 260 and 740, are excluded in the computation. Estimates of the marginal reliability for the test forms corresponding to the three SC-Alt grade-band assessments can be seen in Exhibit 5.4.

Exhibit 5.4: Marginal Reliability and Standard Error of Measurement by Grade-Band and Subject

Subject	Grade-Band	Elementary School	Middle School	High School
Science	N	1045	1552	372
	Reliability	0.90260	0.91763	0.91168
	$\bar{\sigma}_{e^*}$	16.25068	15.73629	26.69730
Social Studies	N	1045	1548	.
	Reliability	0.93119	0.93071	.
	$\bar{\sigma}_{e^*}$	13.55747	14.51066	.

The marginal reliability estimates for science and social studies met or exceeded 0.90 in each grade-band form. The reliability estimates of both content areas fall into the range of reliability

coefficients found with large-scale assessments (Rudner & Schafer, 2001) and meet the reliability requirements for assessments used for the purposes for which the SC-Alt was designed.

In addition to the marginal reliability estimates, Exhibit 5.4 also displays the marginal standard errors of measurement for each subject and grade-band, labeled $\bar{\sigma}^2_{e^*}$. These marginal standard errors of measurement range between 13 and 16 scale score units, placing the standard error of measurement (SEM) at approximately from a quarter to less than a third of a standard deviation of the content area and grade-band.

Appendix E shows the marginal reliability estimates broken down by groups of students beginning at each starting task. The reliability coefficients in Exhibits E-1–E-4 are generally somewhat attenuated compared to those in Exhibit 5.4, due to the reduction in variance of scale scores grouped by starting task.

Classification Accuracy

This section describes the extent to which student achievement-level classifications were accurate and consistent across students. Classification accuracy was estimated for each cut score as the average probability of correct achievement-level assignments across all examinees (assignments above or below the cut score), given each examinee's estimated proficiency score, θ_i:

$$\mathrm{CA_K} = \frac{\sum_{i=1}^{N_{k\geq K}} P(\theta_i > \theta_K^* \mid \theta_i, k_i \geq K) + \sum_{i=1}^{N_{k<K}} [1 - P(\theta_i > \theta_K^* \mid \theta_i, k_i < K)]}{N},$$

where

θ_i is the proficiency (i.e., theta) of student *i*;

k_i is the assigned performance level of student *i*;

θ_K^* is the cut score for the performance level *K* on the theta scale; and

N is the sum of the number of students at or above the cut score, $N_{k\geq K}$, and the number of students below the cut score, $N_{k<K}$, or simply the total number of students.

Thus, $P(\theta_i > \theta_K^* \mid \theta_i, k_i \geq K)$ is the probability that a student with θ_i assigned to achievement level k_i is above the cut score, θ_K^*. It is computed as

$$P = \frac{\int_{\theta \geq \theta_{\mathrm{cut}}} f(\theta) L(\theta \mid \mathbf{z}, \mathbf{b}) d\theta}{\int f(\theta) L(\theta \mid \mathbf{z}, \mathbf{b}) d\theta}$$

In the formula, $L(\theta|\mathbf{z},\mathbf{b})$ is the likelihood of theta given the response $\mathbf{z}$ and item parameters $\mathbf{b}$ and $f(\theta)$ is the prior of theta distribution that can take different distribution such as normal, or uniform, depending on our prior belief. Using Bayes' rule, we have

$$f(\theta|\mathbf{z},\mathbf{b}) \propto f(\theta)L(\theta|\mathbf{z},\mathbf{b}),$$

For the Rasch model, $L(\theta|\mathbf{z},\mathbf{b})$ is computed as

$$\arg\max \delta\, L(\delta) = \prod_{i=1}^{R}\prod_{s=1}^{N}\frac{\exp\sum_{k=1}^{x_i}(\theta_s\text{-}\delta_{ki})}{1+\sum_{j=1}^{m_i}\exp\sum_{k=1}^{j}(\theta_s\text{-}\delta_{ki})} \quad (3)$$

where R indexes the total number of items, N indexes the total number of students, θ_s is the person measure for the student s, δ_{ki} is the step value for step k on item i.

The classification accuracy is the expected rate of correct classification probability, ranging from 0 to 1, where higher values indicate superior classification accuracy.

Exhibit 5.5 shows the classification accuracy by content areas, achievement levels, and grade-bands.

Exhibit 5.5: Classification Accuracy and Consistency

Subject	Achievement Level	Elementary School	Middle School	High School	Overall
Science	Level 2	0.987	0.972	0.946	0.974
	Level 3	0.947	0.934	0.916	0.936
	Level 4	0.907	0.913	0.934	0.914
Social Studies	Level 2	0.988	0.986		0.987
	Level 3	0.922	0.912		0.916
	Level 4	0.942	0.949		0.946

For example, according to the estimates in Exhibit 5.5, for both science and social studies, 97% of students were correctly classified at Level 2 or higher (versus at Level 1). In addition, 91% of students were accurately at Level 3 or above (vs. at Levels 1 or 2 combined). Moreover, students in all grade-bands and subjects had a probability greater than 0.90 of being classified accurately as proficient (i.e., as Level 3 or higher) vs. not proficient.

These results indicate that the measurement errors at the performance-level cut points for science and social studies (Exhibits 5.1 and 5.4) are small compared to the overall variance of student performance.

Chapter 6: Score Reports

This chapter describes the method used for reporting scores on the SC-Alt for the spring 2016 administration. An Individual Score Report (ISR) is included in Appendix F as an example of the highly detailed and diagnostic nature of the reports. This chapter gives a brief overview of how scores on the SC-Alt are reported; a more detailed description is available in a separate *Score Reports User's Guide*.

The SC-Alt has three types of score reports: the ISR, or family report; school reports; and district reports. Each report conveys specific information to its target audience. The reports are designed to be easily used by parents and educators. Of particular note, the reports include in-depth information about what students know and can do relative to the South Carolina academic content standards and to the performance levels.

The ISR provides specific performance feedback for each student in science and social studies in grade-bands 4–5 and 6–8. Within each content area, a graphic bar highlights the student's performance level along the proficiency scale. Each performance level is described in broad, easy-to-understand content terms. Further descriptions of what a student knows and can do are tailored and printed for each obtained performance level. For example, if a student is classified as Level 3 in grade band 4–5 social studies test, the following message is printed:

> Students who score at Level 3 should be able to understand the concept of past and present; demonstrate respect for people of authority; identify major symbols of the United States (the flag, bald eagle); recognize that when we work we earn money to buy things; identify features on a map of South Carolina (river, mountain, ocean); match historical figures such as Abraham Lincoln, Thomas Jefferson, etc., to their accomplishments.

Specific activities, based on each student's performance level for each content area, are presented for the family to do at home to help ensure positive academic growth in the content area.

The school report provides a summary of the performance of each student in the school. The alphabetical list of students contains basic demographic information and test form administered, in addition to achievement data. A scale score and achievement level are listed for each student for each content area. A school summary shows the number of students scoring at each performance level.

Three district-level reports are issued. The district roster summary report displays the roster of the district's tested students along with their demographic information, their scale scores and performance levels for each content area, and type of test form. The district summary by test form report presents a roster of schools in which students were tested, identifying the test form and giving the number of students tested in each content area and the percentages achieved in each performance level by content area. The total number of students tested with each form and their performance-level distributions by content area are listed at the bottom of the report. The district demographic summary report shows the number of students tested and the distributions of performance levels in all content areas, disaggregated by gender, ethnicity, lunch program, migrant status, and ESL status.

The separate *Score Reports User's Guide* has more specific information on how to interpret student scores and score reports and how to relate academic growth as measured by the SC-Alt to classroom curricula and activities. The guide has been widely distributed throughout South Carolina.

Chapter 7: Student Performance Data from the Spring 2016 Administration

Performance data from the spring 2016 administration are presented in this chapter. This was the ninth operational administration of the SC-Alt science assessments and the eighth operational administration of the SC-Alt social studies assessment. The result can be found in Appendix G.

A total of 3,038 students from 80 school districts and 596 schools were tested with the SC-Alt in spring 2016. The total number of tested students with one or more valid content area scores was 1,073 for the elementary form, 1,575 for the middle school form, and 390 for the high school form.

About forty percent of the participating school districts (30; 38%) tested 15 or fewer students; 36 districts (45%) tested 16 to 50 students; and 14 districts (18%) tested more than 50 students each. Seven districts tested more than 100 students; the greatest number of students tested in one district was 263.

Of the 596 schools testing SC-Alt students, 403 (68%) tested five or fewer students; 132 (22%) tested six to 10 students; 52 (9%) tested 11 to 20 students; and 9 schools (2%) tested 21 or more. No school tested more than 50 students.

The elementary school form was developed to be administered to students who are 9 or 10 years old at the beginning of the school year, which are the ages typical of students enrolled in grades 4 and 5. The middle school form was developed for students aged 11, 12, and 13 (typical of students enrolled in grades 6, 7, and 8). The high school form was developed for students aged 14-17, who are enrolled in grades 9-11.

Students tested with reported ages outside the specified age ranges were either erroneously assigned to the forms by the test administrator or, in some cases, took the test as a result of birth date coding errors on the data files. The performance of students by grade-band form, age, and demographic group for science and social studies content areas is presented in Appendix G. As required, the scale score descriptive statistics are suppressed for groups that have fewer than 10 students.

Chapter 8: Validity

Content Validity

One source of evidence for the content validity of the SC-Alt was obtained through independent alignment studies. The University of North Carolina at Charlotte (UNCC) conducted studies of the alignment of (a) ASMGs to grade-level curriculum standards and (b) SC-Alt items to the ASMGs that they targeted. This was a pilot study conducted by Flowers, Browder, Wakeman, and Karvonen with UNCC through the National Alternate Assessment Center (NAAC). (South Carolina is a member state of the NAAC.) The South Carolina Education Oversight Committee (EOC; 2008a) completed a second independent study of ELA and mathematics, as required by the state Education Accountability Act of 1998 (EAA). The EOC approved the ELA and mathematics content areas on February 28, 2008. The UNCC-alignment study results for the ELA and mathematics assessments are reported in detail in Flowers, Browder, Wakeman, and Karvonen (2006a). The results of the alignment studies for the ELA and mathematics assessments indicate that the state has evidence supporting alignment for its measurement guidelines and alternate assessment based on all seven criteria. We conclude that overall, this is an alternate assessment system that links to the grade level content. Some areas for consideration in further development of the system are noted related to balance of content. (p. 7)

The alignment study results for the science assessment are reported in detail in Flowers, Browder, Wakeman, and Karvonen (2006b) and in an addendum dated December 21, 2007. The results of the alignment study for the science assessment indicate that the strength of the South Carolina science alternate assessment was that nearly all of the content was academic science content (98%). This is especially notable given that the alternate assessment tasks included items accessible to students at all symbolic levels. In contrast, the degree of alignment of alternate assessment tasks/items to grade-level standards was lower than those found in the alignment of ELA and mathematics. This difference could be due to the fact that the state's science grade-level standards changed during the development of the science alternate assessment. Another challenge was that the state had linked its alternate assessment tasks to the state standards and not directly to the measurement guidelines, creating a tough challenge to demonstrating alignment. Our work with other states suggests that science may typically be the area rated as having the weakest alignment. (p. 4)

SCDE reviewed the initial science alignment study and determined that one source of some misalignment had resulted from the linking of some items to multiple standards and indicators in the alignment document provided by SCDE. During the Science Content Review Committee meeting, some members recommended adding additional indicators to align to some items. The intent of these recommendations focused more on instruction and demonstrating that instruction could include multiple standards and indicators. However, the alignment study team considered only the first two standards aligned to each item. In some cases, the first two standards were not necessarily the most appropriate. SCDE prioritized the standards and indicators and resubmitted the documentation for an additional study. From this review, completed December 21, 2007 (Flowers, Browder, Wakeman, & Karvonen, 2007), 163 of 173 items were rated as academic. Of the 10 items listed as nonacademic, six were rated as foundational (p. 1). SCDE is currently addressing the items that were rated as having no content centrality by developing replacement items for new forms.

At the time of the alignment study for ELA and mathematics by Dr. Flowers and colleagues, the design of the SC-Alt was envisioned as a single assessment across grade levels. This design changed to a grade-band assessment following the study; however, the information provided from the alignment study was used to identify items with alignment difficulty, and these items were omitted from the operational grade-band test forms. Information from the review along with teacher comments was also used during item data review as part of the decision-making process regarding inclusion of items in the assessment.

A second independent review of the alignment of the science assessment was conducted by the Education Oversight Committee (EOC; 2008b). The EOC approved the elementary and middle school science alternate assessment on August 12, 2008. The EOC alignment findings were based on the review of two sets of studies of the SC-Alt:

- Studies of the alignment between the SC-Alt science assessment and the state academic standards conducted by University of North Carolina-Charlotte and Western Carolina University professors of curriculum and special education, in cooperation with the South Carolina State Department of Education (SCDE) and the National Alternate Assessment Center (Flowers et al., 2006a, 2006b, 2007).
- A technical review of the task and item data from the 2007 test administration conducted by a professor of educational research and assessment at the University of South Carolina.

Copies of the reports of the EOC reviews and findings are available in their entirety from the SCDE. Based on this review, the EOC identified a number of strengths of the SC-Alt science assessment that were noted in the final report:

- The assessment provides accountability and information for instructional improvement for students with significant cognitive disabilities who would not otherwise be assessed in the state testing programs, even with test accommodations and modifications.
- The assessment is intended to be aligned with the same grade-level academic standards as for all students, although at levels of complexity appropriate for the diversity of cognitive functioning observed among students with significant cognitive disabilities.
- The assessment format allows each student to respond to the items using the communication modes the student uses during instruction, such as oral response, pointing, eye gaze, a response card, sign language, or an augmentative communication device.
- The procedures for placing the student at the appropriate level for beginning each assessment reduces student fatigue and maximizes the student's opportunities to show his or her highest performance;
- The items in the assessment have a wide range of difficulty, and the test is moderately able to discriminate between high and low levels of performance.

The EOC report noted that while 96% of the items were found to be aligned to science inquiry standard indicators, the alignment of the items to content standards was 78%, falling short of an expectation for successful alignment of 90% set by the original evaluators. The EOC recommended that the SCDE review the alignment of the SC-Alt science items to the grade-level standards and identify items needing revision or replacement.

The SCDE and its contractor, AIR, reviewed the alignment and the ASMGs and established priorities for development of tasks to fill identified gaps. During 2008, SCDE and AIR developed five new tasks consisting of 32 items to be used to replace poorly aligned items and improve content coverage in science. Three tasks were developed for the elementary science form, and two tasks were developed for the middle school form based on the findings of the alignment study. The high school physical science test was replaced by a high school biology assessment in spring 2010.

An independent review of the alignment of the new items by the Center for Research on Education (2009a) found that 98% of the new items were aligned to grade-level content standard indicators. Copies of the report of the alignment reviews and findings are available in their entirety from the SCDE.

A follow-up alignment study of the high school ELA and mathematics assessments and biology field-test items was conducted by the Center for Research on Education in October 2009, using the same procedures that were used for the elementary and middle school alignment studies in December 2006 and January 2007. Almost all (94% to 96%) of the items were rated as academic. This percentage exceeds the value typically found in alternate assessments (90%) according to the reviewers. The alignment study results are reported in detail in *High School Alternate Assessment Alignment Report to the South Carolina State Department of Education* (Center for Research on Education, 2009b).

Convergent and Discriminant Validity

According to Critical Element 4.1(e) of the federal peer review and Standard 1.14 of the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 1999), it is desirable, if not necessary, to provide evidence of convergent and discriminant validity. One common method for examining this aspect of validity is with a multitrait-multimethod matrix (MTMM) (Campbell & Fiske, 1959).

Campbell and Fiske (1959) proposed the MTMM design as a tool for the study of convergent and discriminant validity in psychological measurement. The MTMM employs a crossed factorial measurement design of traits and methods to reveal these types of validity in comparison:

- Large correlations on validity diagonals (i.e., same trait and different methods) indicate convergent validity.
- Low correlations in the heterotrait-monomethod blocks indicate discriminant validity and the absence of method effects.

Selection of Traits and Methods

The student's abilities in each of the subjects—science and social studies—make up the two traits for the MTMM study. Two methods are considered for assessing these traits: the SPQ, as a structured teacher rating of student's attainment, and the SC-Alt scale score, as an IRT-based indicator of the student's performance in each subject or trait. In other words, the two methods contrast test scores of student performance with expert (or teacher) ratings. With two traits and two methods, the MTMM correlation matrix is of order 4.

Results

MTMMs were computed separately for each grade-band. The results are given in Exhibits 8.1-8.3. Pearson correlations are used, with pairwise deletion of missing data. For each matrix, the minimum pairwise sample size is indicated. *P*-values of individual correlation coefficients are not reported since *all* correlations are significant ($p < 0.05$).

Exhibit 8.1: MTMM, Scale Scores with SPQ Scores, Elementary School

		IRT Scale Scores		SPQ Scores	
	Subject	**Science**	**Social Studies**	**Science**	**Social Studies**
IRT Scale Scores	Science	*1.00*	0.91		
	Social Studies	*0.91*	*1.00*		
SPQ Scores	Science	**0.67**	0.68	*1.00*	0.93
	Social Studies	0.67	**0.69**	*0.93*	*1.00*

Minimum pairwise N: 1004

Exhibit 8.2: MTMM, Scale Scores and SPQ Scores, Middle School

		IRT Scale Scores		SPQ Scores	
	Subject	**Science**	**Social Studies**	**Science**	**Social Studies**
IRT Scale Scores	Science	*1.00*	0.90		
	Social Studies	*0.90*	*1.00*		
SPQ Scores	Science	**0.71**	0.66	*1.00*	0.93
	Social Studies	0.70	**0.66**	*0.93*	*1.00*

Minimum pairwise N: 1463

Exhibit 8.3: MTMM, Scale Scores and SPQ Scores, Biology

		SPQ Scores	
	Subject	**Science**	**Science**
IRT Scale Scores	Science	1.00	
IRT Scale Scores	Science	**0.63**	1.00

Minimum pairwise N: 369

In each MTMM table, the *convergent validity coefficients* (correlations between measurements of the same trait using different methods) are marked in bold. Most of the convergent validity coefficients range from 0.63 to 0.71 and certainly fall into an acceptable range. These high correlations demonstrate evidence for the validity of the SPQ; the two exhibits indicate that the SPQ and the actual test are essentially measuring the same trait and that the SPQ is a good indicator of performance on the test.

The *heterotrait-monomethod coefficients* in the monomethod triangles (correlations between measurements of different traits using the same method) are set in italics. These correlation coefficients range between 0.90 and 0.91 for IRT scale scores and 0.93 for SPQ scores. The high overall range of these correlations indicates the presence of method variance. However, this is to be expected because the SPQ was not developed to measure the trait; instead, it only indicates

the starting task on the test for measuring the trait. Such a result of high correlations in the monomethod triangles is not uncommon in MTMM studies (Fiske, 1995), and specific conditions offer themselves as causes for the present scenario. First, the different scale types—summed rating scales versus IRT scales of behavioral tests—are in themselves a source of method variation; second, the SPQ's "can do" questions draw on the teacher's memory of a student's possible performance over the long term and are apt to differ in quality and veracity; and third, the IRT scale scores for the three subjects reflect the student's performance in the testing situation and are subject to the student's condition on the testing day.

The *heterotrait-heteromethod coefficients* appear in the tables in regular type. These correlation coefficients fall in the same range as the convergent validity coefficients, with values from 0.66 to 0.70. To confirm discriminant validity, the heterotrait-heteromethod correlations should be smaller than the convergent validity coefficients. However, these MTMMs support the notion that all of the SC-Alt's subject area assessments vary essentially along just a single dimension. Because the population of alternate assessment students is so *very* heterogeneous, the students' general levels of cognitive functioning dominate the relationship among their scale scores.

Validity of the Student Placement Questionnaire (SPQ)

AIR reviewed item data from the 2016 administration regarding the agreement between SPQ-recommended start points and the final observed start points. The purpose of the study was to determine the effectiveness of the SPQ in identifying the most appropriate starting task.

Administration of the SC-Alt uses the SPQ as a pre-assessment instrument to determine the most appropriate starting point in the assessment. The SPQ requires the teacher to evaluate the student on 12–15 "can do" statements addressing the student's skills and knowledge in each content area on the basis of the teacher's prior instructional knowledge of the student. A total score computed from the teacher's SPQ responses indicates the initial starting task for the assessment.

The instructions for using the SPQ require teachers to adjust the starting point below the SPQ-recommended start point when the student is not successful on the first administered task. Alternatively, after reviewing the assessment, some teachers may have judged that a student needed to start at a higher level than recommended by the SPQ.

A summary of the results of the agreement between the SPQ-recommended start points and the observed start points for each content area and grade-band form is presented in Exhibits 8.4 and 8.5.[2] These results indicate that the agreement between the SPQ-recommended start point and the observed start point was 93% for science and 92% for social studies administrations. Use of the SPQ pre-assessment score is only the first step in the procedure used by the test administrator in determining where the student should start the assessment. Since the test administrator is required to make adjustments based on the student's success on the first task and these adjustments are reflected in the agreement rates, the SPQ appears to be working very effectively for targeting the first task to begin the assessment process.

[2] Data of students with missing SPQ scores were excluded from these exhibits.

Exhibit 8.4 Agreement between SPQ and Observed Start Points by SPQ-Recommended Starting Tasks—Science/Biology

	Elementary School				Middle School				High School				
	Recommended Starting Task												
Observed Start Task	s1	3	6	Total	1	3	6	Total	1	3	6	Total	Overall
Starting task consistent with SPQ	*93.30%*	*89.80%*	*98.60%*	*92.10%*	*94.40%*	*92.30%*	*96.90%*	*91.00%*	*99.6%*	*98.2%*	*88.5%*	*92.6%*	*93.6%*
Lower start task than recommended	*0.00%*	*9.00%*	*1.20%*	*2.20%*	*0.00%*	*5.80%*	*2.60%*	*2.60%*	*0.0%*	*1.8%*	*11.5%*	*1.8%*	*1.7%*
Higher start task than recommended	*0.00%*	*1.10%*	*0.00%*	*0.20%*	*0.40%*	*1.50%*	*0.00%*	*0.30%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.2%*
Nonstandard start task	*1.50%*	*0.00%*	*0.00%*	*0.30%*	*2.00%*	*0.00%*	*0.50%*	*0.60%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.3%*
No valid test items; no starting task	*5.10%*	*0.00%*	*0.20%*	*1.00%*	*3.20%*	*0.40%*	*0.00%*	*0.60%*	*0.4%*	*0.0%*	*0.0%*	*0.3%*	*0.9%*
Incomplete SPQ	*0.00%*	*0.00%*	*0.00%*	*3.90%*	*0.00%*	*0.00%*	*0.00%*	*4.80%*	*0.0%*	*0.0%*	*0.0%*	*5.4%*	*3.4%*
Inconsistent with SPQ	*6.70%*	*10.20%*	*1.40%*	*7.90%*	*5.60%*	*7.70%*	*3.10%*	*9.00%*	*0.4%*	*1.8%*	*11.5%*	*7.4%*	*6.4%*
Social Studies Total (N)	*195*	*177*	*653*	*1069*	*250*	*259*	*985*	*1570*	*260*	*57*	*52*	*390*	*3029*

Note: The Total column lists percent consistencies without considering different starting tasks.

Exhibit 8.5: Agreement between SPQ and Observed Start Points by SPQ-Recommended Starting Tasks—Social Studies

Observed Start Task	Elementary School				Middle School				Overall
	Recommended Starting Task								
	1	3	6	Total	1	3	6	Total	
Starting task consistent with SPQ	*93.3%*	*89.8%*	*98.6%*	*92.1%*	*94.4%*	*92.3%*	*96.9%*	*91.0%*	*91.5%*
Lower start task than recommended	*0.0%*	*9.0%*	*1.2%*	*2.2%*	*0.0%*	*5.8%*	*2.6%*	*2.6%*	*2.5%*
Higher start task than recommended	*0.0%*	*1.1%*	*0.0%*	*0.2%*	*0.4%*	*1.5%*	*0.0%*	*0.3%*	*0.3%*
Nonstandard start task	*1.5%*	*0.0%*	*0.0%*	*0.3%*	*2.0%*	*0.0%*	*0.5%*	*0.6%*	*0.5%*
No valid test items; no starting task	*5.1%*	*0.0%*	*0.2%*	*1.0%*	*3.2%*	*0.4%*	*0.0%*	*0.6%*	*0.8%*
Incomplete SPQ	*0.0%*	*0.0%*	*0.0%*	*3.9%*	*0.0%*	*0.0%*	*0.0%*	*4.8%*	*4.4%*
Inconsistent with SPQ	*6.7%*	*10.2%*	*1.4%*	*7.9%*	*5.6%*	*7.7%*	*3.1%*	*9.0%*	*8.5%*
Social Studies Total (N)	*195*	*177*	*653*	*1069*	*250*	*259*	*985*	*1570*	*2639*

Note: The Total column lists percent consistencies without considering different starting tasks.

Start-Stop Analysis

Data from the 2016 SC-Alt were analyzed to address two questions concerning SC-Alt administration procedures and student performance:

1. How many tasks and items were administered to students who were started in the assessment at each of the three start points?
2. What was the achievement level performance of students who were started in the assessment at each of the three start points?

To address these questions, the task start point was identified for each student assessed by the 2016 administration of the SC-Alt. According to each task start point, the number of tasks and items administered and the achievement-level distribution were calculated and summarized.

SC-Alt test administrators were instructed to follow specific procedures concerning the use of the SPQ to determine task start points, the minimum number of tasks to be administered, and whether to continue the administration through additional tasks until the student is no longer able to respond successfully. These procedures are detailed in Appendix A and in the 2016 SC-Alt *Test Administration Manual*.

Number of Tasks Administered

For science and social studies, the minimum number of overall tasks to be administered is six tasks when the test administration is started at Task 1 or seven tasks when the administration begins at either Task 3 or Task 6.

The actual number of tasks administered to students in science and social are presented in Exhibits 8.6 and 8.7. Note that these exhibits show only the cases for which the assessment started at one of the three standard starting points. For a few students, however, the assessment was begun at some nonstandard starting task. These cases are not included in Exhibits 8.6–8.7.

In general, most students were administered at least the minimum number of tasks; the distribution of actual tasks administered often exceeded the minimum required. For science and social studies, 99% to 100% students were administered six or more tasks when started at Task 1; 98% or more students were administered seven or more tasks when started at Task 3 or Task 6.

Generally, fewer than 2% of students across forms and subjects were not administered the minimum number of tasks required. The largest percentage of these violations occurred with high school biology: 1 of 59 students whose assessment started at Task 3 and 1 of the 48 students whose assessment started at Task 6 were administered fewer than the required seven tasks.

For science and social studies, students whose assessment started at Task 1 were administered between 6.7 and 7.7 tasks on average, and their median number of administered tasks was 6; students who started at Task 3 were administered between 7.8 and 9.2 tasks on average, with a median number of administered tasks between 7 and 10; students who started at Task 6 were administered 7 tasks on average, with a median number of administered tasks also as 7. These data indicate that, for both these groups of students, the tendency was to administer more than the minimum number of tasks needed.

These results show that a large majority of the students assessed during the 2016 spring SC-Alt administration were administered at least the minimum number of tasks, and in many instances the test administrators exposed the students to additional, more complex, and more difficult tasks beyond the minimal administration requirements.

Exhibit 8.6: Number of Tasks Administered by Starting Task—Science

		Number of Tasks Administered											
Starting Task		**<6**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**>12**	**Total Students**	**Mean Number of Tasks**	**Median Number of Tasks**
Elementary School Science													
1	**N**	.	135	23	47	11	.	1	22	.	239	7.2	6
	%	.	56.49	9.62	19.67	4.6	.	0.42	9.21	.	100		
3	**N**	1	1	158	9	9	51	.	.	.	229	7.77	7
	%	0.44	0.44	69	3.93	3.93	22.27	.	.	.	100		
6	**N**	.	1	584	.	.	.	.	.	.	585	7	7
	%	.	0.17	99.83	.	.	.	.	.	.	100		
Middle School Science													
1	**N**	2	204	50	22	31	13	1	19	.	342	7.04	6
	%	0.58	59.65	14.62	6.43	9.06	3.8	0.29	5.56	.	100		
3	**N**	1	3	142	39	4	68	.	.	.	257	7.96	7
	%	0.39	1.17	55.25	15.18	1.56	26.46	.	.	.	100		
6	**N**	7	.	947	.	.	.	.	.	.	954	6.99	7
	%	0.73	.	99.27	.	.	.	.	.	.	100		
Total													
	N	11	344	1904	117	55	132	2	41	.	2606	7.18	7
	%	0.42	13.2	73.06	4.49	2.11	5.07	0.08	1.57	.	100		
High School Biology													
1	**N**	2	151	40	23	2	3	2	59	.	282	7.65	6
	%	0.71	53.55	14.18	8.16	0.71	1.06	0.71	20.92	.	100		
3	**N**	.	1	13	2	1	42	.	.	.	59	9.19	10
	%	.	1.69	22.03	3.39	1.69	71.19	.	.	.	100		
6	**N**	.	1	47	.	.	.	.	.	.	48	6.98	7
	%	.	2.08	97.92	.	.	.	.	.	.	100		
Total													
	N	2	153	100	25	3	45	2	59	.	389	7.8	7
	%	0.51	39.33	25.71	6.43	0.77	11.57	0.51	15.17	.	100		

Exhibit 8.7: Number of Tasks Administered by Starting Task—Social Studies

		Number of Tasks Administered											
Starting Task		<6	6	7	8	9	10	11	12	>12	Total Students	Mean Number of Tasks	Median Number of Tasks
Elementary School													
1	N	1	110	14	37	11	9	3	27	.	212	7.57	6
	%	0.47	51.89	6.6	17.45	5.19	4.25	1.42	12.74	.	100		
3	N	1	1	75	39	9	50	.	.	.	175	8.17	8
	%	0.57	0.57	42.86	22.29	5.14	28.57	.	.	.	100		
6	N	3	1	664	.	.	.	.	.	.	668	6.99	7
	%	0.45	0.15	99.4	.	.	.	.	.	.	100		
Middle School													
1	N	.	211	29	4	4	7	2	19	.	276	6.73	6
	%	.	76.45	10.51	1.45	1.45	2.54	0.72	6.88	.	100		
3	N	2	3	117	47	11	102	.	.	.	282	8.3	8
	%	0.71	1.06	41.49	16.67	3.9	36.17	.	.	.	100		
6	N	8	4	980	.	.	.	.	.	.	992	6.98	7
	%	0.81	0.4	98.79	.	.	.	.	.	.	100		
Total													
	N	15	330	1879	127	35	168	5	46	.	2605	7.22	7
	%	0.58	12.67	72.13	4.88	1.34	6.45	0.19	1.77	.	100		

Number of Items Administered

Since test administrators were instructed to administer all of the items in a task and each task contained approximately five items, the number of items administered was roughly proportional to the number of tasks administered. Exhibits 8.8–8.9 show the mean, median, and 25th and 75th percentile for the number of administered items, disaggregated by content area, form level, and task start point. Note that cases with nonstandard starting tasks are not included in Exhibits 8.8–8.9.

For science and social studies, the median number of items administered to students starting at Task 1 ranged between 33 and 36; the median for Task 3 start points ranged between 37 and 59, and the median for Task 6 start points ranged between 35 and 44. Students beginning at Task 6 were administered slightly fewer and a smaller range of items than students starting at Task 3 since these students demonstrated more predictable performance (according to the SPQ results) and the end of the minimally required task range coincided with the end of the test. Students whose test administration began at Task 3 tended to have more items administered to them. In these cases, the administration of a content-area test was ended only when (1) the end of the test was reached or (2) the student could no longer respond successfully on a task (i.e., failed to obtain three or more points on the task).

Exhibit 8.8: Number of Items Administered by Starting Task—Science

Grade-Band	Start Task	N	Mean	P25	Median	P75
Elementary School	1	277	50.2	41	41	60
	3	273	63.5	59	63	73
	7	470	49.8	50	50	50
	TOTAL	1020	53.6	50	50	60
Middle School	1	195	52	44	44	50
	3	222	69.3	60	78	78
	7	582	52	52	52	52
	TOTAL	999	55.8	52	52	54
High School	1	246	55.6	42	42	71
	3	77	71.3	65	79	79
	7	92	52.9	53	53	53
	TOTAL	415	58	42	53	77

Grade-Band	Start Task	N	Mean	P25	Median	P75
Elementary School	1	239	41.9	36	36	46
	3	229	42.8	39	39	48
	6	585	35	35	35	35
	Total	1053	38.2	35	35	39
Middle School	1	342	38.5	33	33	39
	3	257	41.6	37	37	52
	6	954	34.9	35	35	35
	Total	1553	36.8	35	35	35
High School	1	282	43.3	34	34	45
	3	59	54.1	46	59	59
	6	48	39.9	40	40	40
	Total	389	44.5	34	39	59

Exhibit 8.9: Number of Items Administered by Starting Task—Social Studies

Grade-Band	Start Task	N	Mean	P25	Median	P75
Elementary School	1	212	42.9	33	33	46
	3	175	49.3	43	48	60
	6	668	43.9	44	44	44
	TOTAL	1055	44.6	44	44	44
Middle School	1	276	39.2	35	35	35
	3	282	49.2	42	47	59
	6	992	40.8	41	41	41
	TOTAL	1550	42.1	41	41	41

Achievement Level of Students by Start Point

Within a SC-Alt form, two or more tasks (consisting of an average of five items each) are to be used to assess the same standards at different levels of student communication and content complexity, and they are to be placed on the test form in locations that ensure that there is adequate content coverage of the standards regardless of the student's starting point in the assessment. Although tasks are ordered on the form based on student communication levels and average content complexity, items of both lower and higher complexity may appear in each task. This configuration presents items and tasks across the entire assessment providing students with opportunities to demonstrate proficiency. Each student's proficiency and resulting achievement level are determined by the student's performance on the specific group of items the student was administered. The calculation of student proficiency scores is described in Chapter 5. The distribution of achievement levels for students according to start task, form level, and content area is presented in Exhibit 8.10.

The table entries demonstrate interesting operational aspects of the leveled structure of the SC-Alt. In science and social studies, students beginning the assessment at Task 1 are categorized as proficient (achievement Levels 3 and 4) at rates between 9% and 45%, with the lowest percentage in middle school social studies (9.4%), and the highest percentage in elementary science (44.8%). For students starting at Task 3, 42% to 90% of students across content areas are categorized as proficient. Finally, 87% to 100% of students starting at Task 6 tested as proficient.

Summary

The purpose of the start-and-stop point analyses was to document the number of tasks and items students complete during the assessment and the performance levels that groups of students attain who enter the assessment at different start points. The results of these analyses demonstrate the effectiveness of the use of the SPQ and the test administration start and stop rules that are based on the student's performance during the assessment. Except in a few instances, all students were administered adequate numbers of tasks and items to assess the intended content.

The findings indicate that the SPQ start and stop rules were being followed for almost all tested students. A considerable proportion of tested students continued testing beyond the minimum required number of tasks to be administered. As a consequence, in each starting task group, there were students who tested in the proficient range (i.e., at achievement levels 3 or 4). Finally, students assigned to higher starting tasks showed a greater likelihood of testing in the proficient range. These results demonstrate that the tailored assessment design of the SC-Alt operates as expected.

Exhibit 8.10: Achievement Level by Task Start Point, Form Level, and Content Area

		Elementary School (ES)								Middle School (MS)								High School (HS)							
		Starting Task								Starting Task								Starting Task							
		1		3		6		TOTAL		1		3		6		TOTAL		1		3		6		TOTAL	
Subject	**Ach. Level**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Science/ Biology	Level 1	52	21.8	1	0.4	.	.	53	5.0	113	33.0	4	1.6	1	0.1	118	7.6	65	23.1	.	.	.	.	65	16.7
	Level 2	80	33.5	21	9.2	2	0.3	103	9.8	175	51.2	81	31.5	46	4.8	302	19.5	112	39.7	11	18.6	1	2.1	124	31.9
	Level 3	81	33.9	84	36.7	86	14.7	251	23.8	39	11.4	98	38.1	191	20.0	328	21.1	48	17.0	6	10.2	2	4.2	56	14.4
	Level 4	26	10.9	123	53.7	497	85.0	646	61.4	15	4.4	74	28.8	716	75.1	805	51.8	57	20.2	42	71.2	45	93.8	144	37.0
	Proficient	107	44.8	207	90.4	583	99.7	897	85.2	54	15.8	172	66.9	907	95.1	1133	73.0	105	37.2	48	81.4	47	97.9	200	51.4
Social Studies	Level 1	61	28.8	1	0.6	.	.	62	5.9	83	30.1	.	.	1	0.1	84	5.4								
	Level 2	128	60.4	100	57.1	88	13.2	316	30.0	167	60.5	145	51.4	121	12.2	433	27.9								
	Level 3	19	9.0	63	36.0	388	58.1	470	44.6	24	8.7	120	42.6	573	57.8	717	46.3								
	Level 4	4	1.9	11	6.3	192	28.7	207	19.6	2	0.7	17	6.0	297	29.9	316	20.4								
	Proficient	23	10.9	74	42.3	580	86.8	677	64.2	26	9.4	137	48.6	870	87.7	1033	66.7								

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Appendices

Appendix A: Starting and Stopping Rules for Using the Student Placement Questionnaire

Directions for Determining the Starting and Concluding Tasks and Use of the Student Placement Questionnaire, Spring 2016

These directions guide you through the following processes:

- Completing the Student Placement Questionnaire (SPQ)
- Identifying the starting task in each content area
- Adjusting the starting task, if necessary
- Determining when to conclude the administration

Student Placement Questionnaire

The SPQ is designed to identify the most appropriate starting task for each of your students in each content area of the SC-Alt. You will use the SPQ to identify the most appropriate starting task for each student in the SC-Alt assessments in science/biology and social studies. Answer each SPQ item as accurately as you can, based on your experience in the classroom with this student.

The SPQs are located in the Student Answer Folder along with the areas for recording the student's scores on each SC-Alt task. **An example of a completed Social Studies SPQ is included at the end of these instructions.**

For the spring 2016 administration, the number of tasks is consistent across all content areas. Each form has 12 tasks.

Identifying the Starting Task for a Student in Each Content Area

1. Bubble in your responses to the SPQ questions.
2. Count the number of bubbles you marked in each of the first three columns and write the totals in the blocks under each column.
3. In section 3 at the bottom of the page:
   a. Write the column totals in the appropriate blocks.
   b. Multiply each total by the specified multiplier and write the resulting totals in the blocks to the right.
   c. Sum the three totals to obtain the total SPQ score. Write the SPQ score in the blocks and bubble in the SPQ score.

   Please check your work and complete the bubble grids for the total SPQ score.

4. Find the total SPQ score in section 4 to determine the starting task for this student.

Note: Failure to complete the SPQ for each content area being assessed will result in test score invalidation.

Administering the Starting Task and Completing the Administration

After you identify the starting task for this student using the SPQ, follow these directions to administer the starting task and complete the administration.

Note that the SPQ provides the initial starting point for a student's administration. It may be necessary to adjust the starting task based on the student's level of success on the first task. Also, the administration should be continued beyond the minimum number of tasks when the student is responding successfully.

Minimum Number of Tasks to Be Completed

For elementary school and middle school science and social studies, and for high school biology, each student must be administered a minimum of **six** tasks (including the starting task) if the student is started at Task 1, or a minimum of **seven** tasks if the student is started at Task 3 or Task 6. The minimum number of tasks and the specific tasks that must be administered to each student for each starting level are specified in the table below.

Minimum Number of Tasks Completed at Each Start Point

Starting Task	Administer All Items in at Least These Tasks
Task 1	1–6
Task 3	3–9
Task 6	6–12

Note: It may be necessary to adjust the starting task based on the student's level of success on the first task. Additionally, the administration should be continued beyond the minimum number of tasks when the student is responding successfully.

Instructions for Adjusting the Starting Task Based on the Student's Level of Success on the First Task

When a student is started at Task 3 or at Task 6 and **does not receive a minimum of three total points on the first task**, the starting task was too difficult and the test administrator must restart the student at the next lower starting point**. A student may earn the minimum three points on a task** by receiving three points on one item, two points on one item and one point on another item, or one point each on three different items.

Review the following examples for students starting at Task 1, Task 3, or Task 6: Students who start at Task 1

- If the student **does not receive a minimum of three points** on Task 1:
  - No downward adjustment is possible.
  - The administration must progress from Task 1 through at least Task 6.

Students who start at Task 3

- If the student **does not receive a minimum of three points** on Task 3:
  - Restart the student at Task 1.
  - Continue the administration.
  - After Task 2, do not re-administer Task 3.
  - Continue administering tasks at least through Task 6.

Students who start at Task 6

- If the student **does not receive a minimum of three points** on Task 6:
  - Restart the student at Task 3.
  - Continue the administration.
  - After Task 5, do not re-administer Task 6.
  - Continue administering tasks at least through Task 9

When to Conclude the Administration

If the student responds successfully on the last required task as specified in the Minimum Number of Tasks table, continue administering the next task and subsequent tasks until the student no longer responds successfully on a task.

When concluding the administration, responding successfully means students have earned either:

- Six or more points for all the items on the end task in the required range, or
- The maximum points for all the items on the end task in the required range (if the maximum number of points in the end task is fewer than six).

By continuing the administration beyond the last required task when the student is responding successfully, you will provide the maximum opportunity for the student to demonstrate his or her knowledge and skills.

When the student does not respond successfully on the last required task, or when at any point the student does not respond successfully on additional tasks beyond the last required task, you may conclude the administration.

Review the following examples for students starting at Task 1, Task 3, or Task 6: Students who were administered Tasks 1–6

- Administer Task 6:
  - If the student does not respond successfully on Task 6, conclude the administration.
  - If the student responds successfully on Task 6, administer Task 7.
  - If the student does not respond successfully on Task 7, conclude the administration.
  - If the student responds successfully on Task 7, administer Task 8.
  - Continue until the student can no longer respond successfully to a task.

Students who were administered Tasks 6–12

- The assessment is completed.

Note: If the last required task is marked as “Access Limited,” the test administrator should skip the task if applicable to the particular student and provide the student the opportunity to attempt the next task.

Failure to follow the rules for starting and concluding the administration, including not dropping back to an earlier start point when appropriate, will result in test score invalidation.

SC - ALT STUDENT PLACEMENT QUESTIONNAIRE - SOCIAL STUDIES

Follow steps 1-4 to complete the SPQ and identify the starting task.

(1) Please darken the bubble (●) that corresponds to the most appropriate response for this student. Mark only one response for each item. Please mark a response for all items below. Use a No. 2 pencil only.

	Independently	With verbal/gestural prompting	With physical prompting/hand-over-hand	No, she/he cannot do this
In the domain of understanding his or her own self and surroundings, can this student:				
1. Classify himself or herself using characteristics such as gender?	●	○	○	○
2. Identify surroundings, including the classroom, school, home and community?	○	●	○	○
In the domain of recognizing and identifying family and community, can this student:				
3. Identify family members?	○	●	○	○
4. Recognize teachers and other members of the community, both at school and in the larger community?	○	●	○	○
In the domain of authority, rules, and consequences, can this student:				
5. Identify authority figures in the family, the classroom, the school, and in the community?	○	○	●	○
6. Understand rules, their purposes, who makes them, and the consequences of breaking them?	○	●	○	○
In the domain of qualities of good citizenship, can this student:				
7. Recognize qualities of good citizenship in the classroom?	●	○	○	○
In the domain of understanding American values, principles, historical figures, and national holidays, can this student:				
8. Give examples of respect and fair treatment?	○	●	○	○
9. Identify symbols of the United States?	●	○	○	○
In the domain of jobs, work, and money, can this student:				
10. Recognize that money is used to purchase goods and/or services?	○	●	○	○
11. Identify different jobs in the school and community?	○	○	●	○
12. Categorize community businesses and services based on the goods and services they provide?	○	○	●	○
In the domain of historical events and accomplishments, can this student:				
13. Identify different physical features of South Carolina?	○	●	○	○
14. Understand major crops of South Carolina?	○	○	●	○
(2) Write in the total number of bubbles you marked in each column	3	7	4	
	Col.1	*Col.2*	*Col.3*	

(3) Calculate the SPQ total score

(a) write the column totals from (2) in (a) below
(b) multiply and write the results in (b) below
(c) sum the results from (b) and write the sum in (c)

	(a)		(b)
Column 1 Total	3	x 3 =	9
		+	
Column 2 Total	7	x 2 =	14
		+	
Column 3 Total	4	x 1 =	4

(c) Total SPQ Score = 2 7

(4) Identify the starting task for this student using the SPQ total score from step (3).

If the total score is in this range	Start at this task	Administer all items in at least these tasks
0-10	Task 1	1-6
11-21	Task 3	3-9
22-42	Task 6	6-12

Appendix B: Scoring Audits and Analysis of Second Rater Data from the Spring 2016 Operational Administration

A second rater study was conducted to audit scoring accuracy and classification consistency for the spring 2016 administrations of the SC-Alt in Science. **Scoring accuracy** refers to the degree to which teachers follow scaffolding and scoring directions correctly and assign correct scores to student responses. **Classification consistency** refers to the degree to which students are assigned to the same performance levels based on item scores by test administrators and second raters. This appendix describes the sampling procedures, the identified sample of students, and the results for the attained sample of completed second rater administrations.

Sampling Procedures

The 2016 sampling procedure was designed to assign second raters to approximately one third of unique test administrators (TA), which were about 10 percent of students in each school district for Science. For districts that have one or two TAs, one TA was assigned a second rater. Within a district, approximately one-third of TAs were randomly sampled in schools that had one or two TAs. In each school that had three or more TAs, approximately one-third of TAs were randomly sampled. TAs who were sampled in the spring 2015 administration were excluded from 2016 sampling.

For each TA in the sample, one of his or her students was randomly selected. A sample of students was identified for second rater assessment so that (a) all districts implementing the SC-Alt would be required to assign a second rater to at least one student administration, and (b) the total number of audited test administrations per district would be based on the number of teachers involved in the assessment for each district. The sampled students had their item responses scored simultaneously by a second rater who was present during the test administration.

The number of test administrations audited from the districts is shown in Exhibit B-1.

Exhibit B-1: Distribution of Second Rater Sample Records across Districts—by Test Form

Grade-Band	# of Students	# of Districts
Elementary School	1	16
	2	16
	3	7
Middle School	1	33
	2	12
	3	7
	4	1
	5	1
	8	1
High School	1	16
	2	6

Grade-Band	# of Students	# of Districts
	3	1
	5	2
	6	1

Based on the sampling plan and the numbers of pre-identified students coded for each district for the 2016 administration, the frequency distribution of test administrations sampled per district was as follows:

Elementary School: Second Rater

- 1 test administration—16 districts
- 2–5 test administrations—23 districts

Middle School: Second Rater

- 1 test administration—33 districts
- 2–5 test administrations—21 districts
- 6–10 test administrations—1 district

High School: Second Rater

- 1 test administration—16 districts
- 2–5 test administrations—9 districts
- 6–10 test administrations—1 district

The sampling of students and teachers was conducted from the January 2016 precode file, which was the pre-identification file for the spring 2016 SC-Alt administration. The sampling was conducted by AIR, and the TAs and students identified for the second rater assignment were assembled in the second rater sample file that was sent to SCDE for approval. The approved second rater sample file was used for the production of materials and district notification.

Analysis of Second Rater (SR) Data

During the spring 2016 administration of the SC-Alt, a total of 210 administrations had second rater data collected. Of these cases, 69 were collected from elementary school administrations, 95 from middle school, and 46 from high school. The spring 2016 second rater study was applied to Social Studies assessments only. These administrations involved a second rater observer independently scoring the administration along with the test administrator (TA). The scoring data from the second rater was recorded on a separate answer folder. The official TA scoring data and the second rater data were compared by the contractor to conduct the scoring consistency and classification consistency analyses reported in this technical report. Exhibit B-2 displays the student demographics of the second rater sample broken down by grade-band.

Exhibit B-2: Demographic Frequencies for the Second Rater Data Samples—by Test Form

	Elementary School		Middle School		High School	
	N	%	N	%	N	%
STUDENT'S ETHNICITY						
American Indian or Alaska Native	.	.	.	.	.	.
Asian	1	1.45	3	3.16	2	4.26
Black or African-American	33	47.83	50	52.63	16	34.04
Double-bubbled	.	.	.	.	.	.
Hispanic or Latino	7	10.14	9	9.47	2	4.26
Native Hawaiian or Other Pacific Islander	.	.	.	.	.	.
Other	.	.	.	.	.	.
Two or More Races	2	2.9	2	2.11	2	4.26
Unknown	.	.	.	.	.	.
White	26	37.68	31	32.63	24	51.06
STUDENT'S GENDER						
Female	15	21.74	30	31.58	19	40.43
Male	54	78.26	65	68.42	28	59.57
ESL (LANGUAGE)						
Advanced	1	1.45	.	.	.	.
Beginner	1	1.45	2	2.11	.	.
English Speaker II–Native English speaker	63	91.3	86	90.53	45	95.74
Intermediate	.	.	1	1.05	.	.
Pre-functional	4	5.8	4	4.21	2	4.26
Pre-functional Waiver	.	.	2	2.11	.	.
ELIGIBLE FOR FREE OR REDUCED-PRICE LUNCH						
Free Meals	7	10.14	15	15.79	12	25.53
Reduced	.	.	.	.	.	.
Full-Pay Meals	62	89.86	80	84.21	35	74.47
EFA GRADE (REPORTED GRADE FOR FUNDING)						
3	4	5.8	1	1.05	.	.
4	36	52.17	2	2.11	.	.
5	29	42.03	13	13.68	.	.
6	.	.	29	30.53	.	.
7	.	.	30	31.58	1	2.13
8	.	.	18	18.95	2	4.26
9	.	.	2	2.11	6	12.77

	Elementary School		Middle School		High School	
	N	%	N	%	N	%
10	.	.	.	.	20	42.55
11	.	.	.	.	18	38.3
COMPLETION STATUS: Social Studies						
Attempted	1	1.45	1	1.05	47	100
Test Not Valid: Student received fewer than 23 scored responses	.	.	.	.	.	.
Special Status						
Migrant Status	.	.	.	.	.	.
Home Schooled	3	4.35	1	1.05	1	2.13
Medical Homebound	.	.	1	1.05	1	2.13
Student Disability						
Unknown	.	.	.	.	.	.
Autism	15	21.74	28	29.47	9	19.15
Deaf-Blindness	.	.	.	.	.	.
Developmental Delay	1	1.45	.	.	.	.
Emotional Disability	.	.	2	2.11	1	2.13
Mild Intellectual Disability	27	39.13	35	36.84	7	14.89
Deaf/Hard of Hearing	1	1.45	1	1.05	3	6.38
Learning Disability	2	2.9	1	1.05	1	2.13
Multiple Disabilities	.	.	.	.	1	2.13
No Disability	.	.	.	.	.	.
Orthopedic Impairment	1	1.45	1	1.05	2	4.26
Other Health Impairment	2	2.9	2	2.11	1	2.13
Severe Intellectual Disability	4	5.8	7	7.37	6	12.77
Speech/Language Impairment	.	.	1	1.05	.	.
Traumatic Brain Injury	1	1.45	2	2.11	.	.
Moderate Intellectual Disability	15	21.74	14	14.74	16	34.04
Visual Impairment	.	.	1	1.05	.	.
TOTAL	69	100	95	100	47	100

When the attained second rater samples are compared to the "assessed population" (see Exhibit 3.4), the following statements can be made:

By form:

- The attained sample approximates the expected number of students for each form: Elementary students make up 33% of the sample, middle school students 45%, and high school students 22%.

By the Individualized Education Program (IEP) disability code:

The important primary disabilities are profound (severe), trainable (moderate), and educable (mild) mental disability, and autism. If any of the mental disabilities were coded together with autism, then only the mental disability was reported. The other rows in the table show additional disabilities coded by the test administrators.

- Severe Intellectual Disability was sampled similarly to the expectation across forms (sampled percent to overall percent) (elementary school: 6%–5%, middle school: 7%–7%, and high school: 13%–11%,).
- Moderate Intellectual Disability was sampled at a similar rate (22%, 15% and 34%) to the expectation (22%, 25%, and 35%).
- Mild Intellectual Disability was sampled at a similar rate (39%, 37% and 15%) to the expectation (27%, 30% and 21%).
- Autism was sampled at a similar rate (22%, 29% and 19%) to the expectation (28%, 27% and 21%).

By other demographic variables:

For other demographic variables, the proportions in the second rater sample generally correspond to those seen in the total assessed population when data were available.

- In the sample, African American (48%, 53% and 34%),[3] Asian (1%, 3% and 4%), Hispanic (10%, 9%, and 4%), white (38%, 33% and 51%), and multi-race (3%, 2% and 4%) ethnicities were reported, representing the majority of ethnicities in the total assessed population. These percentages evidence some variability around the corresponding population values as a result of the small sample sizes.
- Gender is distributed as approximately two males for each female.
- "English Speaker II" (91%, 91%, and 96%) in the sample reflects the percentage of students in the assessed population (93%, 94%, and 95%)..
- In the sample, 10%, 16% and 26% of students were eligible for Free Lunch, compared to 19%, 21% and 28% in the total population. None of the students in the sample were eligible for Reduced Lunch compared to 1% to 3% of the assessed population.
- None of the students in the attained second rater sample were migrant, but two students were medically homebound, and five students were home-schooled.

The attained second rater sample (Exhibit B-2) appears to reasonably represent the full population (Exhibit 3.4). The demographic variables of interest are present in the attained sample data within acceptable ranges of the assessed population.

[3] The percentage range is reported across the three subsamples—for the elementary school, middle school, and high school Science assessments.

Item Agreement Analysis

Within each grade-band, the absolute difference between test administrator (TA) scores and second rater (SR) item scores for each item was computed. Scores that did not differ between TA and SR are noted as "equal"; scores differing by +/–1 score point were noted as "adjacent." Scores differing by more than +/–1 point were flagged as "discrepant." The agreement data are summarized by grade-band in Exhibit B-3, where values indicate the average percentage of items falling within each agreement category for which there were valid matched responses across TAs and SRs.

For the elementary school form, the second rater audit showed 99% of items scored as "equal" between the TA and SR, "adjacent" ratings were the next most prevalent outcome (at 1%), and "discrepant" ratings were the least prevalent result (0%).

On the middle school form, the second rater study showed a pattern similar to the elementary form: 99% of the item scores matched as "equal," 1% as "adjacent," and 0% as "discrepant."

Exhibit B-3: Average Item Agreement Statistics by Method, Grade-Band, and Subject

Subject	Agreement	Response					
		Elementary School		Middle School		High School	
		Count	%	Count	%	Count	%
Science	Equal	2543	98.6	3489	98.7	1956	98.6
	Adjacent	35	1.4	43	1.2	2	1.4
	Discrepant	0	0	2	0.1	0	0

Classification Consistency Analysis (as distinct from scoring consistency as discussed in the previous section)

The reported performance levels for each student are derived from a scale score to performance level conversion process. Scale scores are produced based on conversions from the raw scores assigned by the TA. From these scale scores, students were assigned to one of four performance levels (i.e., Level 1, 2, 3, or 4) within each grade-band and content area assessment. The correspondence between reported (TA) performance levels and SR performance levels was assessed according to the kappa and weighted kappa coefficients. In particular, consistency was assessed through the *weighted kappa statistic* (Agresti, 1990; Spitzer, Cohen, Fleiss, & Endicott, 1967), which is appropriate for ordered categories:

$$\kappa_w = \frac{\sum\sum w_{ij}\pi_{ij} - \sum\sum w_{ij}\pi_{i+}\pi_{+j}}{1 - \sum\sum w_{ij}\pi_{i+}\pi_{+j}},$$

where i is the category assigned by the TA, j is the category assigned by the SR, $w_{ij} = 1-(i-j)^2/(I-1)^2$ are the weights, π_{ij} is the probability of being classified as ij, and "+" indicates agreement between categories. Kappa equals 0 when the agreement is that expected by chance, and kappa equals 1 when there is perfect agreement among raters.

Under the current condition, it must be noted that not all cases included in this analysis contained complete data. The "N" rows of Exhibit B-4 indicate the *effective sample size* (where "N" is the count of valid TA administrations with complete SR item scores). For these realized samples, there is a high level of agreement: The weighted kappa coefficients are 0.98 for both elementary and middle school, and their 95% confidence intervals fall within ±0.03 of the point estimates.

Exhibit B-4: Agreement Statistics by Method, Subject, and Grade-Band

Subject	Statistic	Second Rater		
		Elementary	Middle	High
Science	N	69	94	47
	kw	0.99	0.97	0.96
	95% CI	0.98–1.01	0.93–1.01	0.92–1.00

Summary

TA and second rater assignments of students to performance levels show high levels of agreement, as weighted kappa above 0.96. Further, the 95% confidence intervals show that, while sample sizes for the current calculations may be small, the agreement indices are significantly greater than chance agreement and often approach 1.00. Based on the current evidence, the second rater results affirm that the SC-Alt was accurately scored by the test administrators.

Appendix C: Descriptions of Achievement Levels (DALs)

Exhibit C-1: Science Descriptions of Achievement Levels

Performance Level	Science Achievement Level Definitions	Grades 4–5	Grades 6–8
1	Students performing at level 1 demonstrate emerging academic skills and competencies in science.	Students performing at level 1 should be able to use their senses to: • observe the outcome of a simple science investigation; • sequence growth patterns; • observe and record daily weather conditions; • recognize the sun and moon and relate them to day and night; and • recognize that objects move when force is applied.	Students performing at level 1 should be able to use their senses to: • choose a question (how) (what if) to conduct a scientific investigation; • identify major body parts of animals; • identify the sun and moon; • recognize that objects move when force is applied and recognize speed (fast and slow); and • sort by one attribute.
2	Students performing at level 2 demonstrate foundational academic skills and competencies in science.	Students performing at level 2 should be able to: • generate a question to conduct a simple scientific investigation; • sort organisms by physical characteristics; • identify daily weather conditions; • recognize the pattern of day and night; • identify the position of objects such as above/below, inside, or on top; and • sort materials by observable properties.	Students performing at level 2 should be able to: • carry out a simple scientific investigation to answer a question; • sort and describe materials by observable properties; • sort and identify organisms by physical characteristics; • identify patterns of day and night; and • recognize that an object at rest moves when force is applied.
3	Students performing at level 3 demonstrate increasing academic skills and competencies in science.	Students performing at level 3 should be able to: • select appropriate tool for gathering data; • carry out a simple scientific investigation; • classify events in sequential order; • distinguish between living and nonliving things; • identify major organs of animals; and • use a graph to compare daily changes in weather conditions.	Students performing at level 3 should be able to: • conduct and analyze the results of a simple scientific investigation; • use graphs, tables, and charts to record data and report on the results of an investigation; • compare the characteristics of living and nonliving things; • identify what plants need to grow; • use a graph or chart to compare weather conditions for each season; and • classify organisms into major groups.
4	Students performing at level 4 demonstrate and apply academic skills and competencies in science.	Students performing at level 4 should be able to: • gain meaning from graphs and tables; • conduct and analyze the results of a scientific investigation; • identify major organs of animals and their functions; • identify living and nonliving things in terms of a food web; • identify natural resources as renewable or nonrenewable; and • identify how heat and light change from season to season.	Students performing at level 4 should be able to: • plan, conduct, and carry out a simple scientific investigation; • communicate simple conclusions using tables and graphs; • identify simple machines (incline plane, lever, pulley); • compare data on temperature changes over time using a graph; • use a graph to show how heat and light change from season to season; and • identify sources of light.

Exhibit C-2: High School Biology Descriptions of Achievement Levels

Performance Level	Biology Achievement Level Definitions	Grade 11
1	Students demonstrate some emerging academic skills and competencies in biology.	Students performing at level 1 should be able to: • Identify a possible outcome of a simple scientific investigation; • Recognize tools that could be used in a simple scientific investigation; • Identify a result of a simple investigation based on observations; • Identify appropriate safety instruments when conducting scientific investigations; • Identify things as cellular (living); • Recognize cellular vs. non cellular (living or nonliving) things; • Recognize that cells are the smallest unit of life; • Identify food as a source of protein, carbohydrates, or fat; • Identify food as a source of energy; • Identify what the human body needs for survival; • Identify the offspring produced by parents; • Identify a physical trait; • Identify adaptations that allow animals to survive in their habitat; • Identify a fossil from a non-fossil; • Identify parent/offspring pairs; • Identify natural things in the environment and things made by humans; • Identify natural resources; • Identify the organism being consumed in a food chain.

Performance Level	Biology Achievement Level Definitions	Grade 11
2	Students performing at level 2 demonstrate foundational academic skills biology.	Students performing at level 2 should be able to: • Identify a prediction; • Identify the outcome of a simple controlled scientific investigation; • Identify scientific instruments used to make observations; • Interpret simple scientific data; • Identify parts of a graph; • Identify appropriate safety procedures when conducting scientific investigations; • Recall that cells are the basic unit of life; • Classify things as cellular or non cellular; • Recognize that cells can be further broken down into smaller units; • Recognize that cells form tissues; • Recognize food as protein, carbohydrate or fat; • Identify the flow of energy in a simple food web; • Identify what plants need for survival; • Identify the source of energy in a food chain; • Identify parents as a source of physical traits; • Identify DNA/genes as a source of traits; • Identify a trait passed from parent to offspring; • Identify favorable and unfavorable traits that determine species survival; • Classify an animal as living or extinct; • Identify a phylogenetic tree as a diagram that shows ancestry of organisms; • Identify living and nonliving resources in an ecosystem; • Recognize the relationships among organisms; • Identify environmental changes that can effect a population; • Identify human activities that affect Earth.

Performance Level	Biology Achievement Level Definitions	Grade 11
3	Students performing at level 3 demonstrate increasing academic skills and competencies in biology.	Students performing at level 3 should be able to: • Identify the hypothesis of a simple investigation; • Recognize which scientific instruments are used to collect and/or record data; • Organize data in a given graph/table/model; • Interpret the results of a scientific data that is displayed in a graph; • Identify the outcome of a simple investigation as the same/different from the original hypothesis; • Identify appropriate safety procedures required when conducting a specific scientific investigation; • Illustrate that all living things are composed of cells; • Identify different types of cells, tissues, and organs; • Illustrate the end product of cell division; • Classify different foods as protein, fat, or carbohydrate; • Summarize the role of protein, carbohydrates, or fat on the body; • Illustrate the flow of energy in a simple food web; • Identify that chromosomes contain DNA; • Identify types of traits passed on from parent to offspring; • Identify offspring based on dominant parent traits; • Identify the structure of DNA; • Identify an organism that is better adapted to a changing habitat; • Identify which organisms are most closely related by using a phylogenetic tree; • Identify predator/prey relationships; • Explain how environmental changes can affect a population; • Identify the sequence of ecological succession; • Classify human activities based on their effect on Earth (beneficial or harmful).
4	Students performing at level 4 demonstrate and apply academic skills and competencies in biology.	Students performing at level 4 should be able to: • Analyze the outcome of a simple investigation and compare it to the hypothesis; • Select the appropriate graph for displaying simple scientific data; • Use laboratory instruments and procedures in a safe manner; • Recall that all cells come from other cells; • Identify a nucleus, cell membrane/wall, vacuole, and chloroplast; • Recall different types of cells; • Illustrate that plants and animals have different cell structures; • Identify different types of cells, tissues, organs, and organ systems; • Classify protein, carbohydrate, or fats based on function or description of structure; • Create a food web showing the flow of energy; • Summarize that plants use photosynthesis to make their own food; • Identify that DNA and genes pass on specific traits to offspring; • Predict physical traits of offspring based on dominant or recessive physical traits of parents; • Identify a dominant trait of a given species; • Identify the principal of natural selection; • Explain the effect of a changing habitat on a population; • Explain the relationship of two organisms based on a phylogenetic tree; • Identify living counterparts of extinct organisms; • Classify interrelationships among organisms within ecosystems; • Predict the effect of environmental changes on a population; • Illustrate the changes that occur during succession;

Performance Level	Biology Achievement Level Definitions	Grade 11
		• Illustrate how human activities affect the naturally occurring processes on Earth.

Exhibit C-3: Social Studies Descriptions of Achievement Levels

Performance Level	Social Studies Achievement Level Definitions	Grades 4–5	Grades 6–8
1	Students performing at level 1 demonstrate emerging academic skills and competencies in social studies.	Students performing at level 1 should be able to: • identify self from others; • respond to a person in authority in the home or school; • follow class rules; • engage in turn-taking; and • listen to information about South Carolina history.	Students performing at level 1 should be able to: • identify self from others; • respond to familiar authority figures; • follow class rules; • engage in turn-taking and sharing; and • listen to information presented about significant and historical events in South Carolina.
2	Students performing at level 2 demonstrate foundational skills and competencies in social studies.	Students performing at level 2 should be able to: • identify characteristics such as gender that help identify self in relation to others; • match workers to different jobs in the community; • recognize people in authority and follow class rules; • match the people we honor on some national holidays (e.g., George Washington, Martin Luther King, Jr.) with the holidays; • distinguish between past and present (match jobs of the past with jobs of the present); and • match significant historical figures such as Thomas Edison to their accomplishments.	Students performing at level 2 should be able to: • identify surroundings (e.g., classroom, school); • match different people to their jobs in the community; • identify people in authority and follow class rules; • demonstrate understanding of rules; • identify the people we honor on some national holidays (e.g., George Washington, Martin Luther King, Jr.); • identify the purpose of money; and • match changes over time to the past and present such as communication.
3	Students performing at level 3 demonstrate increasing skills and competencies in social studies.	Students performing at level 3 should be able to: • understand the concept of past and present; • demonstrate respect for people in authority; • identify major symbols of the United States; • identify why we celebrate the national holidays; • recognize that when we work we earn money to buy things; • identify features on a map of South Carolina (river, mountain, ocean); • answer questions about significant events related to the Civil War; and • identify historical figures such as Thomas Edison, Alexander Graham Bell, etc. to their accomplishments.	Students performing at level 3 should be able to: • identify members of the larger community (e.g., police officers, fire-fighters, doctors); • demonstrate understanding of consequences of not following the rules; • identify examples of good citizenship such as honesty, courage, etc.; • identify symbols of the United States (e.g., the flag, bald eagle); • demonstrate an understanding that we work to earn money and use money to buy things; • identify changes over time such as in travel, farming, etc.; • gain information from maps, charts, and graphs; and • answer questions about key historical figures and significant historical events including the civil rights movement.

Performance Level	Social Studies Achievement Level Definitions	Grades 4–5	Grades 6–8
4	Students performing at level 4 demonstrate and apply academic skills and competencies in social studies.	Students performing at level 4 should be able to: • place personal history on a timeline; • identify the roles of leaders and officials in local government (e.g., principal, mayor, governor); • identify individuals who embody qualities of good citizenship; • identify examples of respect and fair treatment; • recognize that we exchange money for goods and services; • use a key to locate geographic features on a map of South Carolina; • answer questions about key concepts related to the Civil War; and • answer questions about the accomplishments of key historical figures such as Thomas Edison, Alexander Graham Bell, etc.	Students performing at level 4 should be able to: • place personal and family history on a timeline; • identify roles of leaders and officials in local government (e.g., principal, mayor, governor); • identify examples of the qualities of courage and patriotism; • identify examples of respect and fair treatment and their opposites; • recognize how the amount of money available determines what we can buy; • gain information from maps and charts; and • identify the accomplishments of Civil Rights leaders including Rosa Parks.

Appendix D: Marginal Reliability by Grade-Band, Subject, Starting Task, Gender, and Ethnic Group

Exhibit D-1: Marginal Reliability by Starting Task and Grade-Band for Science

Initial Task	Statistic	Elementary	Middle	High
1	N	230	339	267
	$\bar{\sigma}_{e^*}$	15.98	18.25	26.19
	Reliability	0.90	0.89	0.89
3	N	229	256	59
	$\bar{\sigma}_{e^*}$	14.41	12.89	26.92
	Reliability	0.83	0.82	0.88
6	N	584	953	46
	$\bar{\sigma}_{e^*}$	16.87	15.43	29.19
	Reliability	0.80	0.82	0.69

Exhibit D-2: Marginal Reliability by Starting Task and Grade-Band for Social Studies

Initial Task	Statistic	Elementary	Middle
1	N	200	269
	$\bar{\sigma}_{e^*}$	14.48	17.12
	Reliability	0.92	0.91
3	N	175	282
	$\bar{\sigma}_{e^*}$	10.80	11.51
	Reliability	0.86	0.87
6	N	668	989
	$\bar{\sigma}_{e^*}$	13.87	14.47
	Reliability	0.87	0.87

Exhibit D-3: Marginal Reliability by Subject, Gender, and Grade-Band

Subject	Gender	Elementary	Middle	High	Overall
Science	Female	0.912	0.920	0.894	0.912
	Male	0.897	0.916	0.919	0.912
Social Studies	Female	0.934	0.931		0.933
	Male	0.929	0.931		0.931

Exhibit D-4: Marginal Reliability by Subject, Major Ethnic Group, and Grade-Band

Subject	Ethnicity	Elementary	Middle	High	Overall
Science	African American	0.894	0.916	0.905	0.908
	White	0.905	0.917	0.917	0.914
Social Studies	African American	0.929	0.931		0.931
	White	0.931	0.929		0.931

Appendix E: Score Report Sample

INDIVIDUAL STUDENT REPORT

Prepared Especially for the Family of

Kelly Adams

Date of Birth:	09/20/2004
Student ID:	123456123456
School District:	Columbia
School:	Alfonso Elementary

Spring 2016

The South Carolina Alternate Assessment (SC-Alt)

Kelly participated in the South Carolina Alternate Assessment (SC-Alt) during the spring of 2016.

She took the elementary school form of the test, which is based on academic standards from grades 4 and 5. This report is designed to provide you with information on your child's performance on this assessment.

The SC-Alt is a test designed for students with significant cognitive disabilities who participate in a school curriculum that includes academic and functional skill instruction. The alternate assessment only tests students' achievement in science and social studies. Individualized Education Program (IEP) reports and other methods provide parents with information on how students are progressing in the other areas.

What is the SC-Alt?

- The SC-Alt includes performance tasks in each subject area. Students may complete the tasks by using their usual method of communication. This may include pointing or gazing at answer choices; selecting objects, pictures, or picture symbols that represent an answer choice; or reading letters, words, or sentences to complete the task.
- The tasks are linked to the state academic content standards in two areas: science and social studies.
- Students are assigned a test form based on their age. Students ages 9–10 are assigned to the elementary school form; students ages 11–13 are assigned to the middle school form; and students age 16 take the high school form.

How are scores reported and used?

- Four achievement levels (Level 1, Level 2, Level 3, and Level 4) have been established for the SC-Alt. Achievement levels describe how students are doing in relation to the state academic standards. Your child's performance is also reported as a scale score that allows parents to monitor growth from year to year.
- SC-Alt is also a state and federal accountability measure and the results provide information on how schools and districts are doing as well.

Where can I get more information about SC-Alt and my child's performance?

- You can contact your child's teacher or school for more information.
- You can view examples of tasks, information about expectations at each achievement level, and scale score tables on the South Carolina Department of Education Web site at http://ed.sc.gov/tests/assessment-information/testing-swd/sc-alt/.

The South Carolina Department of Education

Spring 2016
Kelly Adams

The SC-Alt

Science

Kelly scored at Level 1 with a scale score of 270 in science.

Students who score at Level 1 should be able to:

- use senses to observe the outcome of a simple scientific investigation;
- sequence growth patterns;
- observe and record daily weather conditions;
- recognize the sun and moon and relate them to day and night;
- recognize that objects move when force is applied.

4	Students performing at Level 4 demonstrate and apply academic skills and competencies in science.
3	Students performing at Level 3 demonstrate increasing academic skills and competencies in science.
2	Students performing at Level 2 demonstrate foundational academic skills and competencies in science.
Your Child's Level ▶ 1	Students performing at Level 1 may demonstrate emerging academic skills and competencies in science.

How you can support Kelly's learning

- Ask your child what will happen when you flip or press the "On" switch for the television, lights, washing machine, computer.
- Ask your child to point to the body part that is used to see, taste, smell, or hear (eyes, mouth, nose, or ear).
- Discuss daily weather conditions with your child.

Social Studies

Kelly scored at Level 1 with a scale score of 270 in social studies.

Students who score at Level 1 should be able to:

- identify self from others;
- respond appropriately to a person of authority in the home or at school;
- follow rules;
- engage in turn-taking;
- begin to distinguish between past and present.

4	Students performing at Level 4 demonstrate and apply academic skills and competencies in social studies.
3	Students performing at Level 3 demonstrate increasing academic skills and competencies in social studies.
2	Students performing at Level 2 demonstrate foundational academic skills and competencies in social studies.
Your Child's Level ▶ 1	Students performing at Level 1 may demonstrate emerging academic skills and competencies in social studies.

How you can support Kelly's learning

- Help your child find her picture in a family album or photo.
- Help your child find a picture of her mother, father, or caregiver.
- Help your child follow rules by going to bed when an alarm rings or sitting in a chair at mealtime.
- Help your child engage in taking turns in picking out an activity, food, or song.
- Help your child choose a storybook about South Carolina and read it to her.

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Spring 2016
Kelly Adams

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Spring 2016
Kelly Adams

The SC-Alt

The following areas are tested in Science:

Scientific Inquiry involves studying scientific processes and skills such as:

- observing
- classifying
- predicting what will happen in a simple scientific experiment

Life Science

- basic needs of plants and animals
- their structures and habitats

Earth Science

- weather
- objects in the sky (sun and moon)
- earth materials (rocks and soil)

Physical Science

- characteristics of objects
- the effect of force on the motion of objects
- light, heat, and electricity

The following areas are tested in Social Studies:

Social Studies Literacy Elements are concepts required for understanding this subject such as:

- distinguishing between past, present, and future
- demonstrating responsible citizenship within the school community, the local community, and national communities
- creating and using timelines
- understanding the relationship between people and the land

Academic Standards include concepts related to specific historical time frames:

- history
- geography
- political science/government
- economics

4

SCHOOL REPORT

Prepared Especially for
Alfonso Elementary

School District: Columbia
SIDN Code: 1234567

Spring 2016

The South Carolina Alternate Assessment (SC-Alt)

Your students participated in the South Carolina Alternate Assessment (SC-Alt) during the spring of 2016.

The SC-Alt is a test designed for students with significant cognitive disabilities who participate in a school curriculum that includes both academic and functional skill instruction.

This report provides information on your students' achievement in science and social studies. Individualized Education Programs (IEP) and other reports provide educators and parents with information on how students are progressing in other areas.

Students at your school may have taken either the elementary, middle or high school form. Students are assigned a test form based on each student's age. Students ages 9–10 are assigned to the elementary school form; students ages 11–13 are assigned to the middle school form; and students age 16 are assigned to the high school form.

More about SC-Alt

- SC-Alt is an assessment that includes a series of performance tasks in each subject area and allows students to respond by using their typical method of communication. This may include pointing or gazing at response options; selecting objects, pictures, or picture symbols that represent an answer choice; or reading letters, words, or sentences to complete a task.
- The tasks are linked to the academic content standards through the South Carolina Extended Standards documents in science and social studies. The Extended Standards provide the link to the state grade level academic standards at lower levels of complexity or with greater focus on introductory or prerequisite skills. Go to http://ed.sc.gov/tests/assessment-information/testing-swd/sc-alt/ to view these documents and for additional information on SC-Alt.
- Results are reported as achievement levels and scale scores. The SC-Alt scale scores are used in federal and state accountability calculations. See the *2016 Score Report User's Guide* for additional information on achievement levels and scale scores and guidance on interpreting the school score reports.

The South Carolina Department of Education

Spring 2016
1234567

The SC-Alt

Teacher Name / Student Name	Student ID	Demographic Information			SC-Alt Test Form
	Student ID	Date of Birth	Gender	Ethnicity	Elementary School (ES), Middle School (MS), High School (HS)
Shafi, Danish					
Adams, Kelly	587412589457	09/20/04	F	B	ES
Felder, Adam	541265891203	12/02/04	M	W	ES
Goff, Larkin	845790125443	03/16/05	F	W	ES
Peck, Nancy	549321024785	09/01/05	F	B	ES
Tucker, Julie	545748965451	10/06/04	F	B	ES
Stewart, Elizabeth					
Brown, Jeffrey	875426985001	07/04/05	M	W	ES
Hernandez, Maria	587412698741	09/06/04	M	H	ES
Johnson, Michael	687412589458	12/25/05	M	W	ES
Williams, Allison	945790125444	06/27/05	F	B	ES
Yoon, Bokhee	649321024786	08/03/05	F	A	ES

NT - Not Tested
NV - Not a Valid Test Administration

Note: Students ages 9 through 13 (grades 4–8) were tested in science and social studies. Students age 16 were tested in biology. **Social studies is not tested at the high school level. ELA and mathematics were not tested in Spring 2016.**

Score Summary	
Number Scoring Achievement Level 1	
Number Scoring Achievement Level 2	
Number Scoring Achievement Level 3	
Number Scoring Achievement Level 4	
Number Not Tested (includes NV)	

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Spring 2016
1234567

Science		Social Studies	
Scale Score Range 260 – 740	Achievement Level 1 – 4	Scale Score Range 260 – 740	Achievement Level 1 – 4
270	1	270	1
475	3	525	3
449	2	NV	NV
449	2	465	2
NV	NV	461	2
485	2	515	3
388	1	640	4
731	4	NV	NV
540	4	640	4
449	2	450	2

Science	Social Studies
2	1
4	3
1	2
2	2
1	2

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Spring 2016
1234567

The SC-Alt

The following areas are tested in Science:

Scientific Inquiry involves studying scientific processes and skills such as:

- observing
- classifying
- predicting what will happen in a simple scientific experiment

Life Science

- basic needs of plants and animals
- their structures and habitats

Earth Science

- weather
- objects in the sky (sun and moon)
- earth materials (rocks and soil)

Physical Science

- characteristics of objects
- the effect of force on the motion of objects
- light, heat, and electricity

The following areas are tested in Social Studies:

Social Studies Literacy Elements are concepts required for understanding this subject such as:

- distinguishing between past, present, and future
- demonstrating responsible citizenship within the school community, the local community, and national communities
- creating and using timelines
- understanding the relationship between people and the land

Academic Standards include concepts related to specific historical time frames:

- history
- geography
- political science/government
- economics

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Appendix F: Student Performance by Demographics, Grade-Band, and Subject Area

Exhibit F-1: Performance by Grade-Band and Demographics—Science[4]

Science	Grade-Band														
	Elementary School					Middle School					High School				
	N	Scale Score		Ach. Level		N	Scale Score		Ach. Level		N	Scale Score		Ach. Level	
		Mean	SD	<3	>=3		Mean	SD	<3	>=3		Mean	SD	<3	>=3
STUDENT'S AGE															
8	22	476.73	74.22	7	15	.	.	.	.	.	.	.	.	.	.
9	527	503.91	60.75	91	436	.	.	.	.	.	.	.	.	.	.
10	515	510.71	64.69	73	442	.	.	.	.	.	.	.	.	.	.
11	3	529.33	25.32	.	3	531	507.49	56.42	154	377	.	.	.	.	.
12	1	595	.	.	1	525	513.87	58.7	133	392	.	.	.	.	.
13	.	.	.	.	.	513	511.37	67.76	148	365	.	.	.	.	.
14	.	.	.	.	.	2	501	72.12	1	1	.	.	.	.	.
16	.	.	.	.	.	.	.	.	.	.	386	491.12	101.39	190	196
17	.	.	.	.	.	.	.	.	.	.	4	594.5	47.06	.	4
STUDENT'S ETHNICITY															
American Indian or Alaska Native	2	451	130.11	1	1	5	503.8	48.61	2	3	2	575.5	132.23	1	1
Asian	7	505.14	24.42	.	7	24	463.17	74.77	13	11	5	439	72.26	4	1
Black or African-American	543	511.26	63.17	86	457	743	511.27	60.86	200	543	184	489.43	95.33	88	96
Double-bubbled	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hispanic or Latino	101	492.05	67.21	18	83	118	503.81	64.08	33	85	20	468.1	94.76	10	10
Native Hawaiian or Other Pacific Islander	1	515	.	.	1	.	.	.	.	.	2	360.5	142.13	2	.
Other	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Two or More Races	31	485.81	85.53	8	23	46	536.59	47.52	9	37	11	496.45	120.55	4	7
Unknown	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
White	383	506.32	59.3	58	325	635	511.74	60.23	179	456	166	500.02	106.84	81	85

[4] Note: Data marked '–' are suppressed because the subgroup contains fewer than 10 students.

Science	Grade-Band														
	Elementary School					Middle School					High School				
	N	Scale Score		Ach. Level		N	Scale Score		Ach. Level		N	Scale Score		Ach. Level	
		Mean	SD	<3	>=3		Mean	SD	<3	>=3		Mean	SD	<3	>=3
STUDENT'S GENDER															
Female	350	501.19	65.16	60	290	533	509.63	62.38	154	379	136	484.51	96.81	66	70
Male	718	509.51	61.96	111	607	1038	511.53	60.45	282	756	254	496.28	103.87	124	130
Unknown	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
ESL (LANGUAGE)															
Unknown	1	463	.	1	.	2	560.5	21.92	.	2	1	576	.	.	1
Pre-Functional	53	482.87	61.45	12	41	64	496.27	68.98	21	43	14	424.79	93.81	7	7
Beginner	12	539.92	47.46	.	12	14	545.79	46.21	.	14	.	.	.	.	.
Intermediate	3	501	19.67	.	3	3	525	18.25	.	3	.	.	.	.	.
Advanced	2	510.5	38.89	.	2	.	.	.	.	.	.	.	.	.	.
Initially English Proficient	.	.	.	.	.	1	513	.	.	1	1	640	.	.	1
English Speaker I	.	.	.	.	.	3	511.33	45.17	1	2	1	669	.	.	1
English Speaker II	992	508.09	62.85	155	837	1471	511.18	60.83	410	1061	372	493.8	100.72	182	190
Pre-Functional Waiver	1	463	.	1	.	6	477.67	49.31	3	3	1	424	.	1	.
Intermediate Waiver	.	.	.	.	.	1	576	.	.	1	.	.	.	.	.
Student Missed Annual ELD Assessment	4	424	110.16	2	2	6	509.17	75.14	1	5	.	.	.	.	.
ELIGIBLE FOR FREE OR REDUCED-PRICE LUNCH															
Free Meals	200	502.48	66.12	41	159	332	521.05	60.73	77	255	110	499.16	103.3	47	63
Reduced	7	497.86	41.09	1	6	18	509.94	54.79	5	13	11	432.73	81.59	10	1
Full-Pay Meals	861	507.86	62.55	129	732	1221	508.13	61.03	354	867	269	491.75	100.98	133	136
Unknown	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Science	Grade-Band														
	Elementary School					Middle School					High School				
	N	Scale Score		Ach. Level		N	Scale Score		Ach. Level		N	Scale Score		Ach. Level	
		Mean	SD	<3	>=3		Mean	SD	<3	>=3		Mean	SD	<3	>=3
STUDENT PRIMARY DISABILITY															
Unknown	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Autism	298	504.92	45.95	50	248	430	505.25	48.41	142	288	83	481.28	92.35	48	35
Deaf-Blindness	1	260	.	1	.	.	.	.	.	.	.	.	.	.	.
Developmental Delay	50	504.92	75.91	10	40	2	487	55.15	1	1	.	.	.	.	.
Emotional Disability	3	529.67	48.54	.	3	10	565.6	53.18	.	10	2	660.5	44.55	.	2
Mild Intellectual Disability	288	539.37	41.45	10	278	478	542.58	40.06	27	451	81	563.26	75.53	10	71
Deaf/Hard of Hearing	5	526.2	29.98	.	5	11	501.55	56.21	4	7	5	512.6	41.01	1	4
Learning Disability	18	560.5	33.56	.	18	22	576	56.16	1	21	5	597.8	81.6	1	4
Multiple Disabilities	8	490.25	105.06	2	6	6	500.83	23.91	2	4	4	542.75	73.12	1	3
No Disability	4	450.75	111.06	2	2	1	576	.	.	1	1	582	.	.	1
Orthopedic Impairment	12	532.42	49.84	1	11	21	454.29	125.83	11	10	14	470.5	139.33	7	7
Other Health Impairment	54	528.44	47.65	3	51	77	527.88	60.6	18	59	14	547	97.42	4	10
Severe Intellectual Disability	59	406.41	82.53	43	16	105	412.33	78.86	90	15	41	373.66	73.43	41	.
Speech/Language Impairment	16	543.25	42.96	1	15	7	535	73.46	2	5	1	431	.	1	.
Traumatic Brain Injury	9	442.33	124.92	3	6	8	514.75	71.91	2	6	1	438	.	1	.
Moderate Intellectual Disability	230	488.23	56.9	39	191	388	499.16	46.77	134	254	136	483.05	83.6	73	63

Science	Grade-Band														
	Elementary School					Middle School					High School				
	N	Scale Score		Ach. Level		N	Scale Score		Ach. Level		N	Scale Score		Ach. Level	
		Mean	SD	<3	>=3		Mean	SD	<3	>=3		Mean	SD	<3	>=3
Visual Impairment	13	464.31	59.68	6	7	5	512.4	52.97	2	3	2	312	73.54	2	.
TOTAL	1068	506.79	63.12	171	897	1571	510.88	61.09	436	1135	390	492.18	101.49	190	200

Exhibit F-2: Performance by Grade-Band Form and Student Age—Social Studies[5]

Social Studies	Grade-Band									
	Elementary School					Middle School				
	N	Scale Score		Ach. Level		N	Scale Score		Ach. Level	
		Mean	SD	<3	>=3		Mean	SD	<3	>=3
STUDENT'S AGE										
8	22	479.64	71.08	11	11	.	.	.	.	.
9	528	499.67	61.66	199	329	.	.	.	.	.
10	515	506.29	63.47	182	333	.	.	.	.	.
11	3	562.33	48.52	.	3	530	514.19	55.96	186	344
12	1	632	.	.	1	526	519.68	62.41	174	352
13	.	.	.	.	.	512	517.51	68.45	171	341
14	.	.	.	.	.	2	510	115.97	1	1
STUDENT'S ETHNICITY										
American Indian or Alaska Native	2	406.5	207.18	1	1	5	512.6	42.42	3	2
Asian	7	500.86	26.28	3	4	24	473.71	79.71	16	8
Black or African-American	546	506.66	63.13	181	365	743	519.02	62.52	241	502
Double-bubbled	.	.	.	.	.	.	.	.	.	.
Hispanic or Latino	100	489.83	61.35	45	55	118	509.25	65.55	44	74
Native Hawaiian or Other Pacific Islander	1	496	.	.	1	.	.	.	.	.
Other	.	.	.	.	.	.	.	.	.	.
Two or More Races	31	485.32	85.76	14	17	46	534.78	44.99	8	38
Unknown	.	.	.	.	.	.	.	.	.	.
White	382	502.5	59.97	148	234	634	516.72	61.59	220	414

[5] Note: Data marked '–' are suppressed because the subgroup contains fewer than 10 students.

Social Studies	Grade-Band									
	Elementary School					Middle School				
	N	Scale Score		Ach. Level		N	Scale Score		Ach. Level	
		Mean	SD	<3	>=3		Mean	SD	<3	>=3
STUDENT'S GENDER										
Female	351	498.02	64.1	133	218	532	515.33	61.28	170	362
Male	718	505.06	62.33	259	459	1038	518.01	63.04	362	676
Unknown	.	.	.	.	.	.	.	.	.	.
ESL (LANGUAGE)										
Unknown	1	477	.	1	.	2	553.5	19.09	.	2
Pre-Functional	53	480.74	51.33	28	25	64	500.94	68.97	29	35
Beginner	11	539.55	29.24	1	10	14	557.5	68.69	2	12
Intermediate	3	487.67	20.5	2	1	3	516.33	35.91	1	2
Advanced	2	529.5	20.51	.	2	.	.	.	.	.
Initially English Proficient	.	.	.	.	.	1	511	.	.	1
English Speaker I	.	.	.	.	.	3	507.33	41.05	1	2
English Speaker II	994	503.92	63.29	356	638	1470	517.55	62.08	495	975
Pre-Functional Waiver	1	464	.	1	.	6	486.83	35.17	3	3
Intermediate Waiver	.	.	.	.	.	1	592	.	.	1
Student Missed Annual ELD Assessment	4	416	107.33	3	1	6	497.67	73.74	1	5
ELIGIBLE FOR FREE OR REDUCED-PRICE LUNCH										
Free Meals	203	498.25	70.49	78	125	330	528.24	61.03	78	252
Reduced	7	500	51.81	5	2	18	517.5	65.51	6	12
Full-Pay Meals	859	503.83	61.17	309	550	1222	514.09	62.49	448	774
Unknown	.	.	.	.	.	.	.	.	.	.

Social Studies	Grade-Band									
	Elementary School					Middle School				
	N	Scale Score		Ach. Level		N	Scale Score		Ach. Level	
		Mean	SD	<3	>=3		Mean	SD	<3	>=3
STUDENT PRIMARY DISABILITY										
Unknown	.	.	.	.	.	.	.	.	.	.
Autism	296	501.3	48.64	124	172	431	511.97	47.17	176	255
Deaf-Blindness	1	260	.	1	.	.	.	.	.	.
Developmental Delay	50	506.64	67.24	17	33	2	484.5	64.35	1	1
Emotional Disability	3	512.33	33.08	1	2	10	575.5	49.12	.	10
Mild Intellectual Disability	290	533.5	40.51	38	252	480	549.25	47.23	50	430
Deaf/Hard of Hearing	5	543	31.91	.	5	11	511.45	61.99	5	6
Learning Disability	19	558.89	39.23	.	19	22	584.64	49.22	1	21
Multiple Disabilities	8	471.88	92.58	2	6	6	521.67	25.87	1	5
No Disability	4	465.5	104.01	2	2	1	567	.	.	1
Orthopedic Impairment	12	536.92	57.62	2	10	21	460.48	128.25	11	10
Other Health Impairment	54	526.09	48.05	13	41	75	532.75	54.97	21	54
Severe Intellectual Disability	59	399.32	81.39	55	4	104	419.45	83.58	91	13
Speech/Language Impairment	16	539.44	54.72	3	13	7	549.43	87.88	2	5
Traumatic Brain Injury	9	419.11	120.85	6	3	8	530.63	64.2	2	6
Moderate Intellectual Disability	230	484.11	55.46	120	110	387	503.2	45.59	169	218
Visual Impairment	13	467.54	53.86	8	5	5	513.4	64.26	2	3
TOTAL	1069	502.75	62.97	392	677	1570	517.11	62.44	532	1038