SC EDUCATION OVERSIGHT COMMITTEE

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EDUCATION OVERSIGHT COMMITTEE

AGENDA

Monday, February 10, 2014
1:00 p.m.
433 Blatt Building

I.	Election of New Chair and Vice Chair	Nominating Committee
II.	Approval of the Minutes of December 9, 2013	New Chair
III.	Subcommittee Reports	
	A. Academic Standards and Assessments Action: Proposed Science Academic Standards	Dr. Merck
	B. EIA and Improvement Mechanisms Information: FY2014-15 Budget Recommendations	Mrs. Barton
	C. Public Awareness Subcommittee & Special Reading Subcommittee Action: P-20 Reading Initiative Information: Communications Plan Update	Mrs. Hairfield
IV.	Special Reports	
	Expansion of the SC Child Development Education Pilot Program (CDEPP)	Mrs. Barton
	Accountability Reports	Dana Yow
Adjournment		

J. Phillip Bowers
Anne H. Bull
Mike Fair
Margaret Anne Gaffney
Barbara B. Hairfield
Nikki Haley
R. Wesley Hayes, Jr.
Alex Martin
John W. Matthews, Jr.
Daniel B. Merck
Joseph H. Neal
Andrew S. Patrick
Neil C. Robinson, Jr.
J. Roland Smith
Patti J. Tate
John Warner
David Whittemore
Mick Zais

Melanie D. Barton
EXECUTIVE DIRECTOR

SOUTH CAROLINA EDUCATION OVERSIGHT COMMITTEE
Minutes of the Meeting
December 9, 2013

Members in Attendance: Mr. Neil Robinson (Chair); Mrs. Barbara Hairfield (Vice-Chair); Mr. Phillip Bowers; Mr. Dennis Drew; Sen. Mike Fair; Sen. Wes Hayes; Mr. Alex Martin; Sen. John Matthews; Dr. Danny Merck; Rep. Joe Neal; Rep. Andy Patrick; Ms. Patti Tate; Mr. John Warner; Dr. Mick Zais.

EOC Staff Present: Dr. Kevin Andrews; Mrs. Melanie Barton; Ms. Paulette Geiger; and Ms. Dana Yow

Mr. Robinson called the meeting to order. He recognized the newest member of the EOC, Ms. Patti Tate, a former South Carolina Teacher of the Year and currently an English language arts and social studies program coordinator at Northwestern High School in Rock Hill. Senator Courson, chairman of the Senate Education Committee, appointed Ms. Tate to the EOC to fill the unexpired term of Ms. Ann Marie Taylor.

I. The minutes of the October 14, 2013 meeting were approved as submitted.

II. Key Constituency

Mr. Robinson recognized Elizabeth Reidenbach, Director, of the Department of Instructional Support at the Charleston County School District and Dr. Lisa Herring, Chief Academic Officer for CCSD to discuss the district's initiative to improve primary and middle grades literacy of all students, which began in school year 2010-11. The literacy initiative is part of the Charleston County School District's Strategic Plan, *Charleston Achieving Excellence: Vision 2016*. The goals of Vision 2016 are to close the achievement gap, elevate student achievement overall, and raise the graduation rate.

Regarding reading, Vision 2016 has as its goal that 98% of all third graders will be reading on grade level. To improve literacy, the district requires individualized intervention for students reading below grade level and establishes conditions for promotion. Each year, the Superintendent reports to the local board on the number and percentage of students reading below grade level in grades 3 through 8. The district must also show that each student reading below grade level receives evidenced-based, interventions. For students scoring above the 25th percentile, the district provides balanced literacy instruction, systemic phonics instruction and Tier 1, intervention. For struggling readers, those scoring below the 25th percentile, the district provides balanced literacy instruction, systemic phonics instruction and Tier 2 and Tier 3 interventions. Regular progress monitoring is provided for each student.

Regarding resources, the district has employed 62 Master Teachers working with first graders and 17 master reading teachers at the middle grades, working with those students who are reading at the lowest levels. Associate reading teachers work 170-days and are not certified teachers but have college degrees. Tier 3 interventions are in the primary grades with Reading Recovery and Wilson Foundations. For middle grades, Rewards in Language program is used. Literacy teams at are a critical component of the system. There are 5 literacy specialists, 4 in elementary schools and 1 in middle schools. The cost of the initiative is $7.5 million paid out of general operating funds,

which equates to $2,500 per student in elementary schools and $2,000 per middle school students. Based on the 2013 PASS results, 545 of all third graders scored Met or Exemplary. The district has decreased the number of students requiring Tier 3 interventions. The district noted the importance of professional development for teachers since all teachers need to be teachers of reading.

Mr. Drew, Sen. Matthews, Rep. Neal and Dr. Zais asked questions about the information data system needed to monitor students and the initial results that show a decline in Tier 3 interventions.

III. Subcommittee Reports

The Committee then turned to the Subcommittee reports.

A. Academic Standards and Assessments:

Dr. Merck presented the subcommittee's recommendation that the science standards be referred back to the Department of Education and State Board of Education to give teachers and science coordinators more time to provide input on the standards and to consider the components of the Next Generation Science Standards that should be included in the standards. Dr. Merck described the public comment period that the subcommittee had to review the process and the standards.

Senator Fair argued that the proviso in the state budget that prevents the state from adopting Next Generation Science Standards is intended to prevent the adoption of the standards. Ms. Hairfield expressed her concern that, when creating academic standards, the state of South Carolina should look at the best information available to make our standards even better.

Mr. Bowers made a motion to amend the Subcommittee recommendation by eliminating the second recommendation that the Department in collaboration with science coordinators and science teachers, consider the Next Generation Science Standards and determine what, if any, changes should be made to the South Carolina Academic Standards and Performance Indicators for Science prior to the next meeting of the Academic Standards and Assessment on January 27, 2014. Sen. Fair seconded the motion. Rep. Neal expressed his view that the proviso was intended so as not to adopt Next Generation in totem but that the content of the Next Generation Science Standards should at least be reviewed.

The motion passed with Ms. Hairfield, Sen. Matthews and Rep. Neal requesting to be recorded as voting no.

Mr. Bowers made a second motion that the recommendation be amended to require more public input and comments, especially from parents. After further discussion, the motion was withdrawn.

Mrs. Hairfield made a motion to amend the Subcommittee recommendation so that hat all references to "critically analyze" be changed to "analyze" in the science standards. Mr. Drew seconded the motion.

Sen. Fair spoke against the motion, noting that the issues of evolution and global warming are critical issues in the standards. Dr. Zais agreed noting that these two issues in science require students to think even more critically.

The subcommittee voted on Ms. Hairfield's motion. The vote was 7-7. The chair broke the tie, voting No. The motion failed.

The EOC then adopted the subcommittee recommendation as amended. The science standards were sent back to the South Carolina Department of Education and the State Board of Education with eight specific recommendations for clarifying and condensing several standards.

Dr. Merck then summarized the recommendations and findings of the yearlong review of the state's accountability system by stakeholders and a review panel.

Mr. Warner expressed his opinion that the report does not adequately support systemic changes. He noted that teachers need to be treated as professionals. The key finding should be that public education is inadequate for students to have the knowledge, skills and opportunity to succeed.

After extensive discussion, Sen. Hayes made a motion that the report be referred back to the Subcommittee with Mr. Warner's and others recommendations to be included.

B. EIA and Improvement Mechanisms Subcommittee:

Mr. Drew summarized the subcommittee's budget and proviso recommendations for Fiscal Year 2014-15. Rep. Neal proposed an amendment to the subcommittee report to allow up to $525,000 in technology funds to be used for music instruction. The proviso was adopted. Mr. Bowers and Rep. Smith asked for clarification on the proviso.

Due to the late hour, Mr. Robinson asked that the update on the P-20 Initiative to Improve Reading performance be delayed until the next meeting.

Mr. Robinson then appointed a committee of Sen. Hayes, Rep. Patrick and Mr. Martin, to recommend a new chair and vice chair of the EOC to be considered at the beginning of the February 10, 2014 meeting.

There being no further business, the meeting was adjourned.

EDUCATION OVERSIGHT COMMITTEE

Subcommittee: Academic Standards and Assessments

Date: February 10, 2014

INFORMATION/RECOMMENDATION

Science Standards Revision

PURPOSE/AUTHORITY

The statutory authority for the report is from the EAA, as amended in 2008 (Act 282 of 2008):

SECTION 59-18-350.

(A) The State Board of Education, in consultation with the Education Oversight Committee, shall provide for a cyclical review by academic area of the state standards and assessments to ensure that the standards and assessments are maintaining high expectations for learning and teaching. At a minimum, each academic area should be reviewed and updated every seven years. After each academic area is reviewed, a report on the recommended revisions must be presented to the Education Oversight Committee and the State Board of Education for consideration. After approval by the Education Oversight Committee and the State Board of Education, the recommendations may be implemented. However, the previous content standards shall remain in effect until approval has been given by both entities. As a part of the review, a task force of parents, business and industry persons, community leaders, and educators, to include special education teachers, shall examine the standards and assessment system to determine rigor and relevancy.

(B) The State Department of Education annually shall convene a team of curriculum experts to analyze the results of the assessments, including performance item by item. This analysis must yield a plan for disseminating additional information about the assessment results and instruction and the information must be disseminated to districts not later than January fifteenth of the subsequent year.

CRITICAL FACTS

The State Board of Education has given second reading to the attached science standards. The ASA Subcommittee refers these revised standards to the EOC without a recommendation.

TIMELINE/REVIEW PROCESS

June 2012 – EOC adopts *Report on the Review of the South Carolina Science Academic Standards*

April to January 2013 – SCDE revises science standards

February 2013 - SCDE publishes draft standards published and online feedback survey tool designed to get input from educators

May to July 2013 - SCDE revised and edited draft standards per public comments

October 9, 2013 - -State Board gives first reading to standards

November 18, 2013 – Academic Standards and Assessment Subcommittee reviews science standards and receives public input.

December 9, 2013 – EOC reviews standards and refers standards back to SCDE with suggested revisions.

January 8, 2014 – State Board considers EOC recommendations and makes revisions to the standards. Standards are given second reading and referred back to EOC.

ECONOMIC IMPACT FOR EOC

Cost: Absorbed in operating budget

Fund/Source:

ACTION REQUEST

☐ **For approval** ☐ **For information**

ACTION TAKEN

☐ **Approved** ☐ **Amended**

☐ **Not Approved** ☐ **Action deferred (explain)**

SOUTH CAROLINA
ACADEMIC STANDARDS AND PERFORMANCE INDICATORS FOR SCIENCE

Draft for , 2014

Mick Zais, Ph.D.
State Superintendent of Education

South Carolina Department of Education
Columbia, South Carolina

This document to be submitted to the Education Oversight Committee for approval February 2014

Contents

Acknowledgements iii

Introduction 1

Academic Standards and Performance Indicators for Science

Kindergarten 5
Grade 1 11
Grade 2 18

Grade 3 25
Grade 4 32
Grade 5 39

Grade 6 46
Grade 7 53
Grade 8 60

High School Course Standards Overview 69
Biology 1 *(required)* 70
Chemistry 1 82
Physics 1 91
Earth Science 103

Draft for Education Oversight Committee Approval February 2014

ACKNOWLEDGEMENTS

South Carolina owes a debt of gratitude to the following individuals for their assistance in the development of the *South Carolina Academic Standards and Performance Indicators for Science.*

SOUTH CAROLINA DEPARTMENT OF EDUCATION

The academic standards and performance indicators included in this document were revised under the direction of Charmeka Bosket Childs, Deputy Superintendent, Division of School Effectiveness, Dr. Briana Timmerman, Director, Office of Instructional Practices and Evaluations, and Cathy Jones Stork, Team Leader, Office of Instructional Practices and Evaluations.

The following South Carolina Department of Education (SCDE) staff members assisted in the design and development of this document:

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Dr. Kirsten Hural
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REVIEW PANEL

There were numerous SC educators who reviewed and recommended revisions to the 2005 *South Carolina Science Academic Standards* over the course of the cyclical review process and their efforts and input are appreciated.

Gina Baxter (Spartanburg Five)
Deborah Belflower (Charleston)
Mina Brooks (Newberry)
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Millibeth Currie (Charleston)
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Collette Dryden (Richland One)
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Carol Freeman (Darlington)
Alice Gilchrist (Lander University)
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Mirandi Squires (Florence Five)
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Thomas Webster (Spartanburg Six)
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Draft for Education Oversight Committee Approval February 2014

WRITING PANEL

In addition, the SCDE extends special thanks to the following educators who gave their time, services and expertise to produce much of this document:

Floyd Dinkins (Lexington Two)
Ed Emmer (Richland Two)
Leann Iacuone (Lexington/Richland Five)
Kendrick Kerr (Lexington Two)
Don Kirkpatrick (Marion County)
Gregory MacDougall (S^2TEM Center)
Kyle Rollins (Roper Mountain Science Center)
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Lori Smith (Sumter County)
Tonya Smith (Richland One)
Karen Stratton (Retired Educator)
Ilona Sunday (Richland One)

The SCDE also wishes to thank staff from the Southwest Education Development Laboratory (SEDL) for their assistance with the revision of these standards:

Dr. Haidee Williams, Program Associate
Dr. Sandra Enger, Program Consultant

Draft for Education Oversight Committee Approval February 2014

INTRODUCTION

Science is a way of understanding the physical universe using observation and experimentation to explain natural phenomena. Science also refers to an organized body of knowledge that includes core ideas to the disciplines and common themes that bridge the disciplines. This document, *South Carolina Academic Standards and Performance Indicators for Science*, contains the academic standards in science for the state's students in kindergarten through grade twelve.

ACADEMIC STANDARDS

In accordance with the South Carolina Education Accountability Act of 1998 (S.C. Code Ann. § 59-18-110), the purpose of academic standards is to provide the basis for the development of local curricula and statewide assessment. Consensually developed academic standards describe for each grade and high school core area the specific areas of student learning that are considered the most important for proficiency in the discipline at the particular level.

Operating procedures for the review and revision of all South Carolina academic standards were jointly developed by staff at the State Department of Education (SCDE) and the Education Oversight Committee (EOC). According to these procedures, a field review of the first draft of the revised South Carolina science standards was conducted from March through May 2013. Feedback from that review and input from the SCDE and EOC review panels was considered and used to develop these standards.

The academic standards in this document are not sequenced for instruction and do not prescribe classroom activities; materials; or instructional strategies, approaches, or practices. The *South Carolina Academic Standards and Performance Indicators for Science* is not a curriculum.

STATEWIDE ASSESSMENT

The science standards and performance indicators for grades three through eight will be used as the basis for the development and/or refinement of questions on the South Carolina Palmetto Assessment of State Standards (SC-PASS) in science. The SC-PASS is based on the broad standards that address the life, earth, and physical science core content at each grade level. Test questions will measure the practice and/or the core content of the performance indicator. In addition, most performance indicators may be assessed with items that utilize any of the science and engineering practices. For example, an assessment item for a performance indicator that requires students to *construct explanations* may also ask students to use other practices such as *asking questions*, *using models*, or *analyzing data* around the core content in the original indicator. Items may also assess students' understanding of the core content without a science and engineering practice.

The high school course standards and performance indicators for Biology 1 will be used as the basis for the state-required End-of-Course Examination Program (EOCEP) for Biology 1.

Draft for Education Oversight Committee Approval February 2014

SCIENCE CURRICULUM SUPPORT DOCUMENT

The SCDE will develop a support document after these standards have been adopted by the State Board of Education. Local districts, schools and teachers may use that document to construct standards-based science curriculum, allowing them to add or expand topics they feel are important and to organize content to fit their students' needs and match available instructional materials. The support document will include suggested resources, instructional strategies, essential knowledge, and assessment recommendations.

CROSSCUTTING CONCEPTS

Seven common threads or themes are presented in *A Framework for K-12 Science Education* (2012). These concepts connect knowledge across the science disciplines (biology, chemistry, physics, earth and space science) and have value to both scientists and engineers because they identify universal properties and processes found in all disciplines. These crosscutting concepts are:

1. Patterns
2. Cause and Effect: Mechanism and Explanation
3. Scale, Proportion, and Quantity
4. Systems and System Models
5. Energy and Matter: Flows, Cycles, and Conservation
6. Structure and Function
7. Stability and Change

These concepts should not to be taught in isolation but reinforced in the context of instruction within the core science content for each grade level or course.

SCIENCE AND ENGINEERING PRACTICES

In addition to the academic standards, each grade level or high school course explicitly identifies S*cience and Engineering Practice* standards, with indicators that are differentiated across grade levels and core areas. The term "practice" is used instead of the term "skill," to emphasize that scientists and engineers use skill and knowledge simultaneously, not in isolation. These eight science and engineering practices are:

1. Ask questions and define problems
2. Develop and use models
3. Plan and conduct investigations
4. Analyze and interpret data
5. Use mathematical and computational thinking
6. Construct explanations and design solutions
7. Engage in scientific argument from evidence
8. Obtain, evaluate, and communicate information

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for their grade levels and courses. It is critical that educators understand that the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level or course.

Draft for Education Oversight Committee Approval February 2014

Additionally, an important component of all scientists and engineers' work is communicating their results both by informal and formal speaking and listening, and formal reading and writing. Speaking, listening, reading and writing is important not only for the purpose of sharing results, but because during the processes of reading, speaking, listening and writing, scientists and engineers continue to construct their own knowledge and understanding of meaning and implications of their research. Knowing how one's results connect to previous results and what those connections reveal about the underlying principles is an important part of the scientific discovery process. Therefore, students should similarly be reading, writing, speaking and listening throughout the scientific processes in which they engage.

STRUCTURE OF THE STANDARDS DOCUMENT

The organization and structure of this standards document includes:

- **Grade Level Overview**: An overview that describes the specific content and themes for each grade level and/or high school course.

- **Academic Standard**: Statements of the most important, consensually determined expectations for student learning in a particular discipline. In South Carolina, academic standards are specified for kindergarten through grade eight and for the following high school courses: biology, chemistry, physics, and earth science.

- **Conceptual Understanding**: Statements of the core ideas for which students should demonstrate an understanding. Some grade level topics include more than one conceptual understanding with each building upon the intent of the standard.

- **Performance Indicator**: Statements of what students can do to demonstrate knowledge of the conceptual understanding. Each performance indicator includes a specific science and engineering practice paired with the content knowledge and skills that students should demonstrate to meet the grade level or high school course standards.

- The term *including* appears in parenthetical statements in the performance indicators. It is used to introduce a list of specified components for an indicator that are critical for a specific grade level or course with regard to the state assessments and the management of instructional time. Teachers should focus instruction on the entire indicator including the instructional components specified in the parenthetical statements. The phrase *such as* also appears in parenthetical statements in the performance indicators and provides potential examples to help frame, but not limit, the learning.

RESOURCES

The SCDE, in partnership with SEDL, developed the *Academic Standards and Performance Indicators for Science* utilizing a number of resources. Central among these resources were the *South Carolina Science Academic Standards 2005*. Other resources include:

American Association for the Advancement of Science, 2001. *Atlas of Science Literacy*. Washington, D.C.: Project 2061 and the National Science Teachers Association.

Draft for Education Oversight Committee Approval February 2014

American Association for the Advancement of Science. 2009. *Benchmarks for Science Literacy.* Project 2061. Available at http://www.project2061.org/publications/bsl/online/index.php.

College Board. 2009. *Science College Board Standards for College Success*. Available at http://professionals.collegeboard.com/profdownload/cbscs-science-standards-2009.pdf.

Duschl, Richard A., Heidi A. Schweingruber, and Andrew W. Shouse. *Taking Science to School: Learning and Teaching Science in Grades K-8*. Washington, D.C.: National Academies, 2007.

Lerner, L.S., Goodenough, U., Lynch, J. Schwartz, M. and Schwartz, R. 2012. *The State of State Science Standards 2012*. Available at: http://www.edexcellence.net/publications/the-state-of-state-science-standards-2012.html.

Michaels, Sarah, Andrew W. Shouse, and Heidi A. Schweingruber. *Ready, Set, Science! Putting Research to Work in K-8 Science Classrooms*. Washington, D.C.: National Academies, 2008.

National Research Council. 2012. *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. Washington, D.C.: National Academies Press.

National Assessment Governing Board. 2010. *Science Framework for the 2011 National Assessment of Educational Progress.* Washington, D.C.: U.S. Dept. of Education.

Draft for Education Oversight Committee Approval Feb 14

KINDERGARTEN OVERVIEW

In kindergarten through grade two, the standards and performance indicators for the science and engineering practices and core science content emphasize students making observations and explanations about phenomena they can directly explore and investigate. Student experiences should be structured as they begin to learn the features of a scientific investigation and engage in the practices of science and engineering. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

These academic standards and performance indicators establish the practices and core content that South Carolina's students should know and be able to do by the end of kindergarten.

The three core areas of the kindergarten standards include:

- Exploring Organisms and the Environment
- Exploring Weather Patterns
- Exploring Properties of Objects and Materials

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for their grade level. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to provide a wide variety of learning experiences, materials, and instructional strategies that accommodate a broad range of individual differences. These standards support active engagement in learning. Classrooms will need to be supplied with materials and equipment necessary to complete scientific investigations.

The academic standards and performance indicators for kindergarten should be the basis for the development of classroom and grade-level assessments. Students must demonstrate knowledge of the science and engineering practices and core content ideas in preparation for future learning in science.

Draft for Education Oversight Committee Approval February 2014

KINDERGARTEN
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard K.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

K.P.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

K.P.1A.1 Ask and answer questions about the natural world using explorations, observations, or structured investigations.

K.P.1A.2 Develop and use models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

K.P.1A.3 With teacher guidance, conduct structured investigations to answer scientific questions, test predictions and develop explanations: (1) predict possible outcomes, (2) identify materials and follow procedures, (3) use appropriate tools or instruments to make qualitative observations and take nonstandard measurements, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

K.P.1A.4 Analyze and interpret data from observations, measurements, or investigations to understand patterns and meanings.

K.P.1A.5 Use mathematical thinking to (1) recognize and express quantitative observations, (2) collect and analyze data, or (3) understand patterns and relationships.

K.P.1A.6 Construct explanations of phenomena using (1) student-generated observations and measurements, (2) results of investigations, or (3) data communicated in graphs, tables, or diagrams.

K.P.1A.7 Construct scientific arguments to support explanations using evidence from observations or data collected.

K.P.1A.8 Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions about the natural world, (2) understand phenomena, (3) develop models, or (4) support explanations. Communicate observations and explanations using oral and written language.

Draft for Education Oversight Committee Approval February 2014

K.P.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

K.P.1B.1 Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem, and (6) communicate the results.

Draft for Education Oversight Committee Approval February 2014

KINDERGARTEN
LIFE SCIENCE: EXPLORING ORGANISMS AND THE ENVIRONMENT

Standard K.L.2: The student will demonstrate an understanding of organisms found in the environment and how these organisms depend on the environment to meet those needs.

K.L.2A. Conceptual Understanding: The environment consists of many types of organisms including plants, animals, and fungi. Organisms depend on the land, water, and air to live and grow. Plants need water and light to make their own food. Fungi and animals cannot make their own food and get energy from other sources. Animals (including humans) use different body parts to obtain food and other resources needed to grow and survive. Organisms live in areas where their needs for air, water, nutrients, and shelter are met.

Performance Indicators: Students who demonstrate this understanding can:

K.L.2A.1 Obtain information to answer questions about different organisms found in the environment (such as plants, animals, or fungi).

K.L.2A.2 Conduct structured investigations to determine what plants need to live and grow (including water and light).

K.L.2A.3 Develop and use models to exemplify how animals use their body parts to (1) obtain food and other resources, (2) protect themselves, and (3) move from place to place.

K.L.2A.4 Analyze and interpret data to describe how humans use their senses to learn about the world around them.

K.L.2A.5 Construct explanations from observations of what animals need to survive and grow (including air, water, nutrients, and shelter).

K.L.2A.6 Obtain and communicate information about the needs of organisms to explain why they live in particular areas.

Draft for Education Oversight Committee Approval February 2011

KINDERGARTEN
EARTH SCIENCE: EXPLORING WEATHER PATTERNS

Standard K.E.3: The student will demonstrate an understanding of daily and seasonal weather patterns.

K.E.3A. Conceptual Understanding: Weather is a combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. Scientists measure weather conditions to describe and record the weather and to notice patterns over time. Plants and animals (including humans) respond to different weather conditions in different ways.

Performance Indicators: Students who demonstrate this understanding can:

K.E.3A.1 Analyze and interpret local weather condition data (including precipitation, wind, temperature, and cloud cover) to describe weather patterns that occur from day to day, using simple graphs and pictorial weather symbols.

K.E.3A.2 Develop and use models to predict seasonal weather patterns and changes.

K.E.3A.3 Obtain and communicate information to support claims about how changes in seasons affect plants and animals.

K.E.3A.4 Define problems caused by the effects of weather on human activities and design solutions or devices to solve the problem.

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KINDERGARTEN
PHYSICAL SCIENCE: EXPLORING PROPERTIES OF OBJECTS AND MATERIALS

Standard K.P.4: The student will demonstrate an understanding of the observable properties of matter.

K.P.4A. Conceptual Understanding: Objects can be described and classified by their observable properties, by their uses, and by whether they occur naturally or are manufactured (human-made). Different properties of objects are suited for different purposes.

Performance Indicators: Students who demonstrate this understanding can:

K.P.4A.1 Analyze and interpret data to compare the qualitative properties of objects (such as size, shape, color, texture, weight, flexibility, attraction to magnets, or ability to sink or float) and classify objects based on similar properties.

K.P.4A.2 Develop and use models to describe and compare the properties of different materials (including wood, plastic, metal, cloth, and paper) and classify materials by their observable properties, by their uses, and by whether they are natural or human-made.

K.P.4A.3 Conduct structured investigations to answer questions about which materials have the properties that are best suited to solve a problem or need.

Draft for Education Oversight Committee Approval February 2014

GRADE 1 OVERVIEW

In kindergarten through grade two, the standards and performance indicators for the science and engineering practices and core science content emphasize students making observations and explanations about phenomena they can directly explore and investigate. Student experiences should be structured as they begin to learn the features of a scientific investigation and engage in the practices of science and engineering. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

These academic standards and performance indicators establish the practices and core content that South Carolina's students should know and be able to do by the end of grade one.

The four core areas of the grade one standards include:

- Exploring Light and Shadows
- Exploring the Sun and Moon
- Earth's Natural Resources
- Plants and Their Environments

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for their grade level. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to provide a wide variety experiences, materials, and instructional strategies that accommodate a broad range of individual differences. These standards support active engagement in learning. Classrooms will need to be supplied with the materials and equipment necessary to complete scientific investigations.

The academic standards and performance indicators for grade one should be the basis for the development of classroom and grade-level assessments. Students must demonstrate knowledge of the science and engineering practices and core content ideas in preparation for future science learning.

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GRADE ONE
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 1.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

1.P.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

1.P.1A.1 Ask and answer questions about the natural world using explorations, observations, or structured investigations.

1.P.1A.2 Develop and use models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

1.P.1A.3 With teacher guidance, conduct structured investigations to answer scientific questions, test predictions and develop explanations: (1) predict possible outcomes, (2) identify materials and follow procedures, (3) use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

1.P.1A.4 Analyze and interpret data from observations, measurements, or investigations to understand patterns and meanings.

1.P.1A.5 Use mathematical and computational thinking to (1) recognize and express quantitative observations, (2) collect and analyze data, or (3) understand patterns and relationships.

1.P.1A.6 Construct explanations of phenomena using (1) student-generated observations and measurements, (2) results of scientific investigations, or (3) data communicated in graphs, tables, or diagrams.

1.P.1A.7 Construct scientific arguments to support claims or explanations using evidence from observations or data collected.

1.P.1A.8 Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions about the natural world, (2) understand phenomena, (3) develop models, or (4) support explanations. Communicate observations and explanations clearly through oral and written language.

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1.P.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

1.P.1B.1 Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem, and (6) communicate the results.

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GRADE ONE
PHYSICAL SCIENCE: EXPLORING LIGHT AND SHADOWS

Standard 1.P.2: The student will demonstrate an understanding of the properties of light and how shadows are formed.

1.P.2A. Conceptual Understanding: Objects can only be seen when light shines on them. Some materials allow light to pass through them; others allow only some light to pass through; and some do not allow any light to pass through and will create a shadow of the object. Technology such as mirrors can change the direction of a beam of light.

Performance Indicators: Students who demonstrate this understanding can:

1.P.2A.1 Obtain and communicate information to describe how light is required to make objects visible.

1.P.2A.2 Analyze and interpret data from observations to compare how light behaves when it shines on different materials.

1.P.2A.3 Conduct structured investigations to answer questions about how shadows change when the position of the light source changes.

1.P.2A.4 Develop and use models to describe what happens when light shines on mirrors based on observations and data collected.

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GRADE ONE
EARTH SCIENCE: EXPLORING THE SUN AND MOON

Standard 1.E.3: The student will demonstrate an understanding of the patterns of the Sun and the Moon and the Sun's effect on Earth.

1.E.3A. Conceptual Understanding: Objects in the sky move in predictable patterns. Some objects are better seen in the day sky and some are better seen in the night sky. The Sun is a star that provides heat and light energy for Earth.

Performance Indicators: Students who demonstrate this understanding can:

1.E.3A.1 Use, analyze, and interpret data from observations to describe and predict seasonal patterns of sunrise and sunset.

1.E.3A.2 Use data from personal observations to describe, predict, and develop models to exemplify how the appearance of the moon changes over time in a predictable pattern.

1.E.3A.3 Obtain and communicate information to describe how technology has enabled the study of the Sun, the Moon, planets, and stars.

1.E.3A.4 Conduct structured investigations to answer questions about the effect of sunlight on Earth's surface.

1.E.3A.5 Define problems related to the warming effect of sunlight and design possible solutions to reduce its impact on a particular area.

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GRADE ONE
EARTH SCIENCE: EARTH'S NATURAL RESOURCES

Standard 1.E.4: The student will demonstrate an understanding of the properties and uses of Earth's natural resources.

1.E.4A. Conceptual Understanding: Earth is made of different materials, including rocks, sand, soil, and water. An Earth material is a resource that comes from Earth. Earth materials can be classified by their observable properties.

Performance Indicators: Students who demonstrate this understanding can:

1.E.4A.1 Analyze and interpret data from observations and measurements to compare the properties of Earth materials (including rocks, soils, sand, and water).

1.E.4A.2 Develop and use models (such as drawings or maps) to describe patterns in the distribution of land and water on Earth and classify bodies of water (including oceans, rivers and streams, lakes, and ponds).

1.E.4A.3 Conduct structured investigations to answer questions about how the movement of water can change the shape of the land.

1.E.4B. Conceptual Understanding: Natural resources are things that people use that come from Earth (such as land, water, air, and trees). Natural resources can be conserved.

Performance Indicators: Students who demonstrate this understanding can:

1.E.4B.1 Obtain and communicate information to summarize how natural resources are used in different ways (such as soil and water to grow plants; rocks to make roads, walls, or buildings; or sand to make glass).

1.E.4B.2 Obtain and communicate information to explain ways natural resources can be conserved (such as reducing trash through reuse, recycling, or replanting trees).

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GRADE ONE
LIFE SCIENCE: PLANTS AND THEIR ENVIRONMENTS

Standard 1.L.5: The student will demonstrate an understanding of how the structures of plants help them survive and grow in their environments.

1.L.5A. Conceptual Understanding: Plants have specific structures that help them survive, grow, and produce more plants. Plants have predictable characteristics at different stages of development.

Performance Indicators: Students who demonstrate this understanding can:

1.L.5A.1 Obtain and communicate information to construct explanations for how different plant structures (including roots, stems, leaves, flowers, fruits, and seeds) help plants survive, grow, and produce more plants.

1.L.5A.2 Construct explanations of the stages of development of a flowering plant as it grow from a seed using observations and measurements.

1.L.5B. Conceptual Understanding: Plants have basic needs that provide energy in order to grow and be healthy. Each plant has a specific environment where it can thrive. There are distinct environments in the world that support different types of plants. These environments can change slowly or quickly. Plants respond to these changes in different ways.

Performance Indicators: Students who demonstrate this understanding can:

1.L.5B.1 Conduct structured investigations to answer questions about what plants need to live and grow (including air, water, sunlight, minerals, and space).

1.L.5B.2 Develop and use models to compare how the different characteristics of plants help them survive in distinct environments (including deserts, forests, and grasslands).

1.L.5B.3 Analyze and interpret data from observations to describe how changes in the environment cause plants to respond in different ways (such as turning leaves toward the Sun, leaves changing color, leaves wilting, or trees shedding leaves).

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GRADE 2 OVERVIEW

In kindergarten through grade two, the standards and performance indicators for the science and engineering practices and core science content emphasize students making observations and explanations about phenomena they can directly explore and investigate. Student experiences should be structured as they begin to learn the features of a scientific investigation and engage in the practices of science and engineering. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

These academic standards and performance indicators establish the practices and core content that South Carolina's students should know and be able to do by the end of grade two.

The four core areas of the grade two standards include:

- Weather
- Properties of Solids and Liquids
- Exploring Pushes and Pulls
- Animals and Their Environments

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for their grade level. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to provide a wide variety experiences, materials, and instructional strategies that accommodate abroad range of individual differences. These standards support active engagement in learning. Classrooms will need to be supplied with the materials and equipment necessary to complete scientific investigations.

The academic standards and performance indicators for grade two should be the basis for the development of classroom and grade-level assessments. Students must demonstrate knowledge of the science and engineering practices and core content ideas in preparation for future science learning when students will be formally assessed at the state-level.

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GRADE TWO
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 2.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

2.P.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

2.P.1A.1 Ask and answer questions about the natural world using explorations, observations, or structured investigations.

2.P.1A.2 Develop and use models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

2.P.1A.3 With teacher guidance, conduct structured investigations to answer scientific questions, test predictions and develop explanations: (1) predict possible outcomes, (2) identify materials and follow procedures, (3) use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

2.P.1A.4 Analyze and interpret data from observations, measurements, or investigations to understand patterns and meanings.

2.P.1A.5 Use mathematical and computational thinking to (1) express quantitative observations using appropriate English or metric units, (2) collect and analyze data, or (3) understand patterns, trends and relationships.

2.P.1A.6 Construct explanations of phenomena using (1) student-generated observations and measurements, (2) results of scientific investigations, or (3) data communicated in graphs, tables, or diagrams.

2.P.1A.7 Construct scientific arguments to support claims or explanations using evidence from observations or data collected.

2.P.1A.8 Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions about the natural world, (2) understand phenomena, (3) develop models, or (4) support explanations. Communicate observations and explanations using oral and written language.

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2.P.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

2.P.1B.1 Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem, and (6) communicate the results.

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GRADE TWO
EARTH SCIENCE: WEATHER

Standard 2.E.2: The student will demonstrate an understanding of the daily and seasonal weather patterns.

2.E.2A. Conceptual Understanding: Weather is the combination of sunlight, wind, precipitation (rain, sleet, snow, and hail), and temperature in a particular region at a particular time. Scientists measure and record these conditions to describe the weather and to identify patterns over time. Weather scientists (meteorologists) forecast severe weather so that communities can prepare for and respond to these events.

Performance Indicators: Students who demonstrate this understanding can:

2.E.2A.1 Analyze and interpret data from observations and measurements to describe local weather conditions (including temperature, wind, and forms of precipitation).

2.E.2A.2 Analyze local weather data to predict daily and seasonal patterns over time.

2.E.2A.3 Develop and use models to describe and compare the effects of wind (moving air) on objects.

2.E.2A.4 Obtain and communicate information about severe weather conditions to explain why certain safety precautions are necessary.

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GRADE TWO
PHYSICAL SCIENCE: PROPERTIES OF SOLIDS AND LIQUIDS

Standard 2.P.3: The student will demonstrate an understanding of the observable properties of solids and liquids and the special properties of magnets.

2.P.3A. Conceptual Understanding: Solids and liquids are two forms of matter that have distinct observable properties. Some matter can be mixed together and then separated again. Solids and liquids can be changed from one form to another when heat is added or removed.

Performance Indicators: Students who demonstrate this understanding can:

2.P.3A.1 Analyze and interpret data from observations and measurements to describe the properties used to classify matter as a solid or a liquid.

2.P.3A.2 Develop and use models to exemplify how matter can be mixed together and separated again based on the properties of the mixture.

2.P.3A.3 Conduct structured investigations to test how adding or removing heat can cause changes in solids and liquids.

2.P.3A.4 Construct scientific arguments using evidence from investigations to support claims that some changes in solids or liquids are reversible and some are not when heat is added or removed.

2.P.3B. Conceptual Understanding: Magnets are a specific type of solid that can attract and repel certain other kinds of materials, including other magnets. There are some materials that are neither attracted to nor repelled by magnets. Because of their special properties, magnets are used in various ways.

Performance Indicators: Students who demonstrate this understanding can:

2.P.3B.1 Conduct structured investigations to answer questions about how the poles of magnets attract and repel each other.

2.P.3B.2 Analyze and interpret data from observations to compare the effects of magnets on various materials.

2.P.3B.3 Obtain and communicate information to exemplify the uses of magnets in everyday life.

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GRADE TWO
PHYSICAL SCIENCE: EXPLORING PUSHES AND PULLS

Standard 2.P.4: The student will demonstrate an understanding of the effects of pushes, pulls, and friction on the motion of objects.

2.P.4A. Conceptual Understanding: An object that is not moving will only move if it is pushed or pulled. Pushes and pulls can vary in strength and direction and can affect the motion of an object. Gravity is a pull that makes objects fall to the ground. Friction is produced when two objects come in contact with each other and can be reduced if needed.

Performance Indicators: Students who demonstrate this understanding can:

2.P.4A.1 Analyze and interpret data from observations and measurements to compare the effects of different strengths and directions of pushing and pulling on the motion of an object.

2.P.4A.2 Develop and use models to exemplify the effects of pushing and pulling on an object.

2.P.4A.3 Construct explanations of the relationship between the motion of an object and the pull of gravity using observations and data collected.

2.P.4A.4 Conduct structured investigations to answer questions about the relationship between friction and the motion of objects.

2.P.4A.5 Define problems related to the effects of friction and design possible solutions to reduce the effects on the motion of an object.

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GRADE TWO
LIFE SCIENCE: ANIMALS AND THEIR ENVIRONMENTS

Standard 2.L.5: The student will demonstrate an understanding of how the structures of animals help them survive and grow in their environments.

2.L.5A. Conceptual Understanding: There are many different groups of animals. One way to group animals is by using their physical characteristics. Animals have basic needs that provide for energy, growth, reproduction, and protection. Animals have predictable characteristics at different stages of development.

Performance Indicators: Students who demonstrate this understanding can:

2.L.5A.1 Obtain and communicate information to classify animals (such as mammals, birds, amphibians, reptiles, fish, or insects) based on their physical characteristics.

2.L.5A.2 Construct explanations for how structures (including structures for seeing, hearing, grasping, protection, locomotion, and obtaining and using resources) of different animals help them survive.

2.L.5A.3 Construct explanations using observations and measurements of an animal as it grows and changes to describe the stages of development of the animal.

2.L.5B. Conceptual Understanding: Animals (including humans) require air, water, food, and shelter to survive in environments where these needs can be met. There are distinct environments in the world that support different types of animals. Environments can change slowly or quickly. Animals respond to these changes in different ways.

Performance Indicators: Students who demonstrate this understanding can:

2.L.5B.1 Obtain and communicate information to describe and compare how animals interact with other animals and plants in the environment.

2.L.5B.2 Develop and use models to exemplify characteristics of animals that help them survive in distinct environments (such as salt and freshwater, deserts, forests, wetlands, or polar lands).

2.L.5B.3 Analyze and interpret data from observations to describe how animals respond to changes in their environment (such as changes in food availability, water, or air).

2.L.5B.4 Construct scientific arguments to explain how animals can change their environments (such as the shape of the land or the flow of water).

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GRADE 3 OVERVIEW

In grades three through five, the standards and performance indicators for the science and engineering practices and core science content emphasize students becoming more sophisticated in describing, representing or explaining concepts or ideas. Students use their experiences from structured investigations in kindergarten through grade two to begin planning their own investigations to answer scientific questions. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

These academic standards and performance indicators establish the practices and core content that South Carolina's students should know and be able to do by the end of grade three.

The four core areas of the grade three standards include:

- Properties and Changes in Matter
- Energy Transfer – Electricity and Magnetism
- Earth's Materials and Resources
- Environments and Habitats

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for their grade level. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to provide a wide variety of experiences, materials, and instructional strategies that accommodate a broad range of individual differences. These standards support active engagement in learning. Classrooms will need to be supplied with the materials and equipment necessary to complete scientific investigations.

The academic standards and performance indicators for grade three should be the basis for the development of classroom and grade-level assessments. In addition, these standards and performance indicators will be the basis for the development of items on the state-required South Carolina Palmetto Assessment of State Standards (SC-PASS). Students must demonstrate knowledge of the science and engineering practices and core content ideas in preparation for future science learning.

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GRADE THREE
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 3.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

3.P.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

3.P.1A.1 Ask questions that can be (1) answered using scientific investigations or (2) used to refine models, explanations, or designs.

3.P.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

3.P.1A.3 Plan and conduct scientific investigations to answer questions, test predictions and develop explanations: (1) formulate scientific questions and predict possible outcomes, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

3.P.1A.4 Analyze and interpret data from observations, measurements, or investigations to understand patterns and meanings.

3.P.1A.5 Use mathematical and computational thinking to (1) express quantitative observations using appropriate English or metric units, (2) collect and analyze data, or (3) understand patterns, trends and relationships.

3.P.1A.6 Construct explanations of phenomena using (1) scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.

3.P.1A.7 Construct scientific arguments to support claims, explanations, or designs using evidence from observations, data, or informational texts.

3.P.1A.8 Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions, (2) understand phenomena, (3) develop models, or (4) support explanations, claims, or designs. Communicate observations and explanations using the conventions and expectations of oral and written language.

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3.P.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

3.P.1B.1 Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

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GRADE THREE
PHYSICAL SCIENCE: PROPERTIES AND CHANGES IN MATTER

Standard 3.P.2: The student will demonstrate an understanding of the properties used to classify matter and how heat energy can change matter from one state to another.

3.P.2A. Conceptual Understanding: Matter exists in several different states and is classified based on observable and measurable properties. Matter can be changed from one state to another when heat (thermal energy) is added or removed.

Performance Indicators: Students who demonstrate this understanding can:

3.P.2A.1 Analyze and interpret data from observations and measurements to describe and compare the physical properties of matter (including length, mass, temperature, and volume of liquids).

3.P.2A.2 Construct explanations using observations and measurements to describe how matter can be classified as a solid, liquid or gas.

3.P.2A.3 Plan and conduct scientific investigations to determine how changes in heat (increase or decrease) change matter from one state to another (including melting, freezing, condensing, boiling, and evaporating).

3.P.2A.4 Obtain and communicate information to compare how different processes (including burning, friction, and electricity) serve as sources of heat energy.

3.P.2A.5 Define problems related to heat transfer and design devices or solutions that facilitate (conductor) or inhibit (insulator) the transfer of heat.

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GRADE THREE
PHYSICAL SCIENCE: ENERGY TRANSFER – ELECTRICITY AND MAGNETISM

Standard 3.P.3: The student will demonstrate an understanding of how electricity transfers energy and how magnetism can result from electricity.

3.P.3A. Conceptual Understanding: Energy can be transferred from place to place by electric currents. Electric currents flowing through a simple circuit can be used to produce motion, sound, heat, or light. Some materials allow electricity to flow through a circuit and some do not.

Performance Indicators: Students who demonstrate this understanding can:

3.P.3A.1 Obtain and communicate information to develop models showing how electrical energy can be transformed into other forms of energy (including motion, sound, heat, or light).

3.P.3A.2 Develop and use models to describe the path of an electric current in a complete simple circuit as it accomplishes a task (such as lighting a bulb or making a sound).

3.P.3A.3 Analyze and interpret data from observations and investigations to classify different materials as either an insulator or conductor of electricity.

3.P.3B. Conceptual Understanding: Magnets can exert forces on other magnets or magnetizable materials causing energy transfer between them, even when the objects are not touching. An electromagnet is produced when an electric current passes through a coil of wire wrapped around an iron core. Magnets and electromagnets have unique properties.

Performance Indicators: Students who demonstrate this understanding can:

3.P.3B.1 Develop and use models to describe and compare the properties of magnets and electromagnets (including polarity, attraction, repulsion, and strength).

3.P.3B.2 Plan and conduct scientific investigations to determine the factors that affect the strength of an electromagnet.

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GRADE THREE
EARTH SCIENCE: EARTH'S MATERIALS AND PROCESSES

Standard 3.E.4: The student will demonstrate an understanding of the composition of Earth and the processes that shape features of Earth's surface.

3.E.4A. Conceptual Understanding: Earth is made of materials (including rocks, minerals, soil, and water) that have distinct properties. These materials provide resources for human activities.

Performance Indicators: Students who demonstrate this understanding can:

3.E.4A.1 Analyze and interpret data from observations and measurements to describe and compare different Earth materials (including rocks, minerals, and soil) and classify each type of material based on its distinct physical properties.

3.E.4A.2 Develop and use models to describe and classify the pattern distribution of land and water features on Earth.

3.E.4A.3 Obtain and communicate information to exemplify how humans obtain, use, and protect renewable and nonrenewable Earth resources.

3.E.4B. Conceptual Understanding: Earth's surface has changed over time by natural processes and by human activities. Humans can take steps to reduce the impact of these changes.

Performance Indicators: Students who demonstrate this understanding can:

3.E.4B.1 Develop and use models to describe the characteristics of Earth's continental landforms and classify landforms as volcanoes, mountains, valleys, canyons, plains, and islands.

3.E.4B.2 Plan and conduct scientific investigations to determine how natural processes (including weathering, erosion, and gravity) shape Earth's surface.

3.E.4B.3 Obtain and communicate information to explain how natural events (such as fires, landslides, earthquakes, volcanic eruptions, or floods) and human activities (such as farming, mining, or building) impact the environment.

3.E.4B.4 Define problems caused by a natural event or human activity and design devices or solutions to reduce the impact on the environment.

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GRADE THREE
LIFE SCIENCE: ENVIRONMENTS AND HABITATS

Standard 3.L.5: The student will demonstrate an understanding of how the characteristics and changes in environments and habitats affect the diversity of organisms.

3.L.5A. Conceptual Understanding: The characteristics of an environment (including physical characteristics, temperature, availability of resources, or the kinds and numbers of organisms present) influence the diversity of organisms that live there. Organisms can survive only in environments where their basic needs are met. All organisms need energy to live and grow. This energy is obtained from food. The role an organism serves in an ecosystem can be described by the way in which it gets its energy.

Performance Indicators: Students who demonstrate this understanding can:

3.L.5A.1 Analyze and interpret data about the characteristics of environments (including salt and fresh water, deserts, grasslands, forests, rain forests, and polar lands) to describe how the environment supports a variety of organisms.

3.L.5A.2 Develop and use a food chain model to classify organisms as producers, consumers, and decomposers and to describe how organisms obtain energy.

3.L.5B. Conceptual Understanding: When the environment or habitat changes, some plants and animals survive and reproduce, some move to new locations, and some die. Fossils can be used to infer characteristics of environments from long ago.

Performance Indicators: Students who demonstrate this understanding can:

3.L.5B.1 Obtain and communicate information to explain how changes in habitats (such as those that occur naturally or those caused by organisms) can be beneficial or harmful to the organisms that live there.

3.L.5B.2 Develop and use models to explain how changes in a habitat cause plants and animals to respond in different ways (such as hibernating, migrating, responding to light, death, or extinction).

3.L.5B.3 Construct scientific arguments using evidence from fossils of plants and animals that lived long ago to infer the characteristics of early environments.

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GRADE 4 OVERVIEW

In grades three through five, the standards and performance indicators for the science and engineering practices and core science content emphasize students becoming more sophisticated in describing, representing or explaining concepts or ideas. Students use their experiences from structured investigations in kindergarten through grade two to begin planning their own investigations to answer scientific questions. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

These academic standards and performance indicators establish the practices and core content for that South Carolina's students should know and be able to do by the end of grade four.

The four core areas of the grade four standards include:

- Weather and Climate
- Stars and the Solar System
- Forms of Energy – Light and Sound
- Characteristics and Growth of Organisms

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for their grade level. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to provide a wide variety of experiences, materials, and instructional strategies that accommodate a broad range of individual differences. These standards support active engagement in learning. Classrooms will need to be supplied with the materials and equipment necessary to complete scientific investigations.

The academic standards and performance indicators for grade four should be the basis for the development of classroom and grade-level assessments. In addition, these standards and performance indicators will be the basis for the development of items on the state-required South Carolina Palmetto Assessment of State Standards (SC-PASS). Students must demonstrate knowledge of the science and engineering practices and core content ideas in preparation for future science learning.

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GRADE FOUR
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 4.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

4.P.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

4.P.1A.1 Ask questions that can be (1) answered using scientific investigations or (2) used to refine models, explanations, or designs.

4.P.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

4.P.1A.3 Plan and conduct scientific investigations to answer questions, test predictions and develop explanations: (1) formulate scientific questions and predict possible outcomes, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

4.P.1A.4 Analyze and interpret data from informational texts, observations, measurements, or investigations using a range of methods (such as tabulation or graphing) to (1) reveal patterns and construct meaning or (2) support explanations, claims, or designs.

4.P.1A.5 Use mathematical and computational thinking to (1) express quantitative observations using appropriate English or metric units, (2) collect and analyze data, or (3) understand patterns, trends and relationships between variables.

4.P.1A.6 Construct explanations of phenomena using (1) scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.

4.P.1A.7 Construct scientific arguments to support claims, explanations, or designs using evidence from observations, data, or informational texts.

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4.P.1A.8 Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions, (2) understand phenomena, (3) develop models, or (4) support explanations, claims, or designs. Communicate observations and explanations using the conventions and expectations of oral and written language.

4.P.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

4.P.1B.1 Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

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GRADE FOUR
EARTH SCIENCE: WEATHER AND CLIMATE

Standard 4.E.2: The student will demonstrate an understanding of the water cycle and weather and climate patterns.

4.E.2A. Conceptual Understanding: Earth's atmosphere is a mixture of gases, including water vapor and oxygen. The movement of water, which is found almost everywhere on Earth including the atmosphere, changes form and cycles between Earth's surface and the air and back again. This cycling of water is driven by energy from the Sun. The movement of water in the water cycle is a major pattern that influences weather conditions. Clouds form during this cycle and various types of precipitation result.

Performance Indicators: Students who demonstrate this understanding can:

4.E.2A.1 Obtain and communicate information about some of the gases in the atmosphere (including oxygen, nitrogen, and water vapor) to develop models that exemplify the composition of Earth's atmosphere where weather takes place.

4.E.2A.2 Develop and use models to explain how water changes as it moves between the atmosphere and Earth's surface during each phase of the water cycle (including evaporation, condensation, precipitation, and runoff).

4.E.2B. Conceptual Understanding: Scientists record patterns in weather conditions across time and place to make predictions about what kind of weather might occur next. Climate describes the range of an area's typical weather conditions and the extent to which those conditions vary over long periods of time. Some weather conditions lead to severe weather phenomena that have different effects and safety concerns.

Performance Indicators: Students who demonstrate this understanding can:

4.E.2B.1 Analyze and interpret data from observations, measurements, and weather maps to describe patterns in local weather conditions (including temperature, precipitation, wind speed/direction, relative humidity, and cloud types) and predict changes in weather over time.

4.E.2B.2 Obtain and communicate information about severe weather phenomena (including thunderstorms, hurricanes, and tornadoes) to explain steps humans can take to reduce the impact of severe weather phenomena.

4.E.2B.3 Construct explanations about regional climate differences using data from the long term weather conditions of the region**.**

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GRADE FOUR
EARTH SCIENCE: STARS AND THE SOLAR SYSTEM

Standard 4.E.3: The student will demonstrate an understanding of the locations, movements, and patterns of stars and objects in the solar system.

4.E.3A. Conceptual Understanding: Astronomy is the study of objects in our solar system and beyond. A solar system includes a sun, (star), and all other objects that orbit that sun. Planets in our night sky change positions and are not always visible from Earth as they orbit our Sun. Stars that are beyond the solar system can be seen in the night sky in patterns called constellations. Constellations can be used for navigation and appear to move together across the sky because of Earth's rotation.

Performance Indicators: Students who demonstrate this understanding can:

4.E.3A.1 Develop and use models of Earth's solar system to exemplify the location and order of the planets as they orbit the Sun and the main composition (rock or gas) of the planets.

4.E.3A.2 Obtain and communicate information to describe how constellations (including Ursa Major, Ursa Minor, and Orion) appear to move from Earth's perspective throughout the seasons.

4.E.3A.3 Construct scientific arguments to support claims about the importance of astronomy in navigation and exploration (including the use of telescopes, astrolabes, compasses, and sextants).

4.E.3B. Conceptual Understanding: Earth orbits around the Sun and the Moon orbits around Earth. These movements together with the rotation of Earth on a tilted axis result in patterns that can be observed and predicted.

Performance Indicators: Students who demonstrate this understanding can:

4.E.3B.1 Analyze and interpret data from observations to describe patterns in the (1) location, (2) movement, and (3) appearance of the Moon throughout the year.

4.E.3B.2 Construct explanations of how day and night result from Earth's rotation on its axis.

4.E.3B.3 Construct explanations of how the Sun appears to move throughout the day using observations of shadows.

4.E.3B.4 Develop and use models to describe the factors (including tilt, revolution, and angle of sunlight) that result in Earth's seasonal changes.

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GRADE FOUR
PHYSICAL SCIENCE: FORMS OF ENERGY – LIGHT AND SOUND

Standard 4.P.4: The student will demonstrate an understanding of the properties of light and sound as forms of energy.

4.P.4A. Conceptual Understanding: Light, as a form of energy, has specific properties including color and brightness. Light travels in a straight line until it strikes an object. The way light reacts when it strikes an object depends on the object's properties.

Performance Indicators: Students who demonstrate this understanding can:

4.P.4A.1 Construct scientific arguments to support the claim that white light is made up of different colors.

4.P.4A.2 Analyze and interpret data from observations and measurements to describe how the apparent brightness of light can vary as a result of the distance and intensity of the light source.

4.P.4A.3 Obtain and communicate information to explain how the visibility of an object is related to light.

4.P.4A.4 Develop and use models to describe how light travels and interacts when it strikes an object (including reflection, refraction, and absorption) using evidence from observations.

4.P.4A.5 Plan and conduct scientific investigations to explain how light behaves when it strikes transparent, translucent, and opaque materials.

4.P.4B. Conceptual Understanding: Sound, as a form of energy, is produced by vibrating objects and has specific properties including pitch and volume. Sound travels through air and other materials and is used to communicate information in various forms of technology.

Performance Indicators: Students who demonstrate this understanding can:

4.P.4B.1 Plan and conduct scientific investigations to test how different variables affect the properties of sound (including pitch and volume).

4.P.4B.2 Analyze and interpret data from observations and measurements to describe how changes in vibration affects the pitch and volume of sound.

4.P.4B.3 Define problems related to the communication of information over a distance and design devices or solutions that use sound to solve the problem.

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GRADE FOUR
LIFE SCIENCE: CHARACTERISTICS AND GROWTH OF ORGANISMS

Standard 4.L.5: The student will demonstrate an understanding of how the structural characteristics and traits of plants and animals allow them to survive, grow, and reproduce.

4.L.5A. Conceptual Understanding: Scientists have identified and classified many types of plants and animals. Each plant or animal has a unique pattern of growth and development called a life cycle. Some characteristics (traits) that organisms have are inherited and some result from interactions with the environment.

Performance Indicators: Students who demonstrate this understanding can:

4.L.5A.1 Obtain and communicate information about the characteristics of plants and animals to develop models which classify plants as flowering or nonflowering and animals as vertebrate or invertebrate.

4.L.5A.2 Analyze and interpret data from observations and measurements to compare the stages of development of different seed plants.

4.L.5A.3 Develop and use models to compare the stages of growth and development in various animals.

4.L.5A.4 Construct scientific arguments to support claims that some characteristics of organisms are inherited from parents and some are influenced by the environment.

4.L.5B. Conceptual Understanding: Plants and animals have physical characteristics that allow them to receive information from the environment. Structural adaptations within groups of plants and animals allow them to better survive and reproduce.

Performance Indicators: Students who demonstrate this understanding can:

4.L.5B.1 Develop and use models to compare how humans and other animals use their senses and sensory organs to detect and respond to signals from the environment.

4.L.5B.2 Construct explanations for how structural adaptations (such as the types of roots, stems, or leaves; color of flowers; or seed dispersal) allow plants to survive and reproduce.

4.L.5B.3 Construct explanations for how structural adaptations (such as methods for defense, locomotion, obtaining resources, or camouflage) allow animals to survive in the environment.

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GRADE 5 OVERVIEW

In grades three through five, the standards and performance indicators for the science and engineering practices and core science content emphasize students becoming more sophisticated in describing, representing or explaining concepts or ideas. Students use their experiences from structured investigations in kindergarten through grade two to begin planning their own investigations to answer scientific questions. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

These academic standards and performance indicators establish the practices and core content that South Carolina's students should know and be able to do by the end of grade five.

The four core areas of the grade five standards include:

- Matter and Mixtures
- Changes in Landforms and Oceans
- Forces and Motion
- Interdependent Relationships in Ecosystems

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for their grade level. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to provide a wide variety of experiences, materials, and instructional strategies that accommodate a broad range of individual differences. These standards support active engagement in learning. Classrooms will need to be supplied with the materials and equipment necessary to complete scientific investigations.

The academic standards and performance indicators for grade five should be the basis for the development of classroom and grade-level assessments. In addition, these standards and performance indicators will be the basis for the development of items on the state-required South Carolina Palmetto Assessment of State Standards (SC-PASS). Students must demonstrate knowledge of the science and engineering practices and core content ideas in preparation for future science learning.

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GRADE FIVE
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 5.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

5.P.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

5.P.1A.1 Ask questions used to (1) generate hypotheses for scientific investigations or (2) refine models, explanations, or designs.

5.P.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

5.P.1A.3 Plan and conduct controlled scientific investigations to answer questions, test hypotheses and predictions, and develop explanations: (1) formulate scientific questions and testable hypotheses, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

5.P.1A.4 Analyze and interpret data from informational texts, observations, measurements, or investigations using a range of methods (such as tabulation or graphing) to (1) reveal patterns and construct meaning or (2) support hypotheses, explanations, claims, or designs.

5.P.1A.5 Use mathematical and computational thinking to (1) express quantitative observations using appropriate metric units, (2) collect and analyze data, or (3) understand patterns, trends and relationships between variables.

5.P.1A.6 Construct explanations of phenomena using (1) scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.

5.P.1A.7 Construct scientific arguments to support claims, explanations, or designs using evidence from observations, data, or informational texts.

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5.P.1A.8 Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions, (2) understand phenomena, (3) develop models, or (4) support hypotheses, explanations, claims, or designs. Communicate observations and explanations using the conventions and expectations of oral and written language.

5.P.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

5.P.1B.1 Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

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GRADE FIVE
PHYSICAL SCIENCE: MATTER AND MIXTURES

Standard 5.P.2: The student will demonstrate an understanding of the physical properties of matter and mixtures.

5.P.2A. Conceptual Understanding: Matter is made up of particles that are too small to be seen. Even though the particles are very small, the movement and spacing of these particles determines the basic properties of matter.

Performance Indicators: Students who demonstrate this understanding can:

5.P.2A.1 Analyze and interpret data from observations and measurements of the physical properties of matter (including volume, shape, movement, and spacing of particles) to explain why matter can be classified as a solid, liquid or gas.

5.P.2B. Conceptual Understanding: A mixture is formed when two or more kinds of matter are put together. Sometimes when two or more different substances are mixed together, a new substance with different properties may be formed but the total amount (mass) of the substances is conserved. Solutions are a special type of mixture in which one substance is dissolved evenly into another substance. When the physical properties of the components in a mixture are not changed, they can be separated in different physical ways.

Performance Indicators: Students who demonstrate this understanding can:

5.P.2B.1 Obtain and communicate information to describe what happens to the properties of substances when two or more substances are mixed together.

5.P.2B.2 Analyze and interpret data to support claims that when two substances are mixed the total amount (mass) of the substances does not change.

5.P.2B.3 Develop models using observations to describe mixtures, including solutions, based on their characteristics.

5.P.2B.4 Construct explanations for how the amount of solute and the solvent determine the concentration of a solution.

5.P.2B.5 Conduct controlled scientific investigations to test how different variables (including temperature change, particle size, and stirring) affect the rate of dissolving.

5.P.2B.6 Design and test the appropriate method(s) (such as filtration, sifting, attraction to magnets, evaporation, chromatography, or floatation) for separating various mixtures.

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GRADE FIVE
EARTH SCIENCE: CHANGES IN LANDFORMS AND OCEANS

Standard 5.E.3: The student will demonstrate an understanding of how natural processes and human activities affect the features of Earth's landforms and oceans.

5.E.3A. Conceptual Understanding: Some of the land on Earth is located above water and some is located below the oceans. The downhill movement of water as it flows to the ocean shapes the appearance of the land. There are patterns in the location and structure of landforms found on the continents and those found on the ocean floor.

Performance Indicators: Students who demonstrate this understanding can:

5.E.3A.1 Construct explanations of how different landforms and surface features result from the location and movement of water on Earth's surface through watersheds (drainage basins) and rivers.

5.E.3A.2 Develop and use models to describe and compare the characteristics and locations of the landforms on continents with those on the ocean floor (including the continental shelf and slope, the mid-ocean ridge, the rift zone, the trench, and the abyssal plain).

5.E.3B. Conceptual Understanding: Earth's oceans and landforms can be affected by natural processes in various ways. Humans cannot eliminate natural hazards caused by these processes but can take steps to reduce their impacts. Human activities can affect the land and oceans in positive and negative ways.

Performance Indicators: Students who demonstrate this understanding can:

5.E.3B.1 Analyze and interpret data to describe and predict how natural processes (such as weathering, erosion, deposition, earthquakes, tsunamis, hurricanes, or storms) affect Earth's surface.

5.E.3B.2 Develop and use models to explain the effect of the movement of ocean water (including waves, currents, and tides) on the ocean shore zone (including beaches, barrier islands, estuaries, and inlets).

5.E.3B.3 Construct scientific arguments to support claims that human activities (such as conservation efforts or pollution) affect the land and oceans of Earth.

5.E.3B.4 Define problems caused by natural processes or human activities and test possible solutions to reduce the impact on landforms and the ocean shore zone.

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GRADE FIVE
LIFE SCIENCE: INTERDEPENDENT RELATIONSHIPS IN ECOSYSTEMS

Standard 5.L.4: The student will demonstrate an understanding of relationships among biotic and abiotic factors within terrestrial and aquatic ecosystems.

5.L.4A. Conceptual Understanding: Ecosystems are complex, interactive systems that include both the living components (biotic factors) and physical components (abiotic factors) of the environment. Ecosystems can be classified as either terrestrial (such as forests, wetlands, and grasslands) or aquatic (such as oceans, estuaries, lakes, and ponds).

Performance Indicators: Students who demonstrate this understanding can:

5.L.4A.1 Analyze and interpret data to summarize the abiotic factors (including quantity of light and water, range of temperature, salinity, and soil composition) of different terrestrial ecosystems and aquatic ecosystems.

5.L.4A.2 Obtain and communicate information to describe and compare the biotic factors (including individual organisms, populations, and communities) of different terrestrial and aquatic ecosystems.

5.L.4B. Conceptual Understanding: All organisms need energy to live and grow. Energy is obtained from food. The role an organism serves in an ecosystem can be described by the way in which it gets its energy. Energy is transferred within an ecosystem as organisms produce, consume, or decompose food. A healthy ecosystem is one in which a diversity of life forms are able to meet their needs in a relatively stable web of life.

Performance Indicators: Students who demonstrate this understanding can:

5.L.4B.1 Analyze and interpret data to explain how organisms obtain their energy and classify an organisms as producers, consumers (including herbivore, carnivore, and omnivore), or decomposers (such as fungi and bacteria).

5.L.4B.2 Develop and use models of food chains and food webs to describe the flow of energy in an ecosystem.

5.L.4B.3 Construct explanations for how organisms interact with each other in an ecosystem (including predators and prey, and parasites and hosts).

5.L.4B.4 Construct scientific arguments to explain how limiting factors (including food, water, space, and shelter) or a newly introduced organism can affect an ecosystem.

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GRADE FIVE
PHYSICAL SCIENCE: FORCES AND MOTION

Standard 5.P.5: The student will demonstrate an understanding of the factors that affect the motion of an object.

5.P.5A. Conceptual Understanding: The motion of an object can be described in terms of its position, direction, and speed. The rate and motion of an object is determined by multiple factors.

Performance Indicators: Students who demonstrate this understanding can:

5.P.5A.1 Use mathematical and computational thinking to describe and predict the motion of an object (including position, direction, and speed).

5.P.5A.2 Develop and use models to explain how the amount or type of force (contact and non-contact) affects the motion of an object.

5.P.5A.3 Plan and conduct controlled scientific investigations to test the effects of balanced and unbalanced forces on the rate and direction of motion of objects.

5.P.5A.4 Analyze and interpret data to describe how a change of force, a change in mass, or friction affects the motion of an object.

5.P.5A.5 Design and test possible devices or solutions that reduce the effects of friction on the motion of an object.

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GRADE 6 OVERVIEW

In grades six through eight, the standards and performance indicators for the science and engineering practices and core science content, transition students to developing and planning controlled investigations to create more explicit and detailed models and explanations. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom. Science in the middle school provides students with the foundation to be successful in high school science courses, by providing a range of content in the life, earth, and physical sciences.

These academic standards and performance indicators establish the practices and core content that South Carolina's students should know and be able to do by the end of grade six.

The four core areas of the grade six standards include:

- Earth's Weather and Climate
- Energy Transfer and Conservation
- Diversity of Life – Classification and Animals
- Diversity of Life – Protists, Fungi, and Plants

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for their grade level. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to provide a wide variety of experiences, materials, and instructional strategies that accommodate a broad range of individual differences. These standards support active engagement in learning. Classrooms will need to be supplied with the materials and equipment necessary to complete scientific investigations

The academic standards and performance indicators for grade six should be the basis for the development of classroom and grade-level assessments. In addition, these standards and performance indicators will be the basis for the development of items on the state-required South Carolina Palmetto Assessment of State Standards (SC-PASS). Students must demonstrate knowledge of the science and engineering practices and core content ideas in preparation for future science courses.

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GRADE SIX

SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 6.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

6.P.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

6.P.1A.1 Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge claims.

6.P.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

6.P.1A.3 Plan and conduct controlled scientific investigations to answer questions, test hypotheses, and develop explanations: (1) formulate scientific questions and testable hypotheses, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

6.P.1A.4 Analyze and interpret data from informational texts, observations, measurements, or investigations using a range of methods (such as tabulation, graphing, or statistical analysis) to (1) reveal patterns and construct meaning or (2) support hypotheses, explanations, claims, or designs.

6.P.1A.5 Use mathematical and computational thinking to (1) use and manipulate appropriate metric units, (2) collect and analyze data, (3) express relationships between variables for models and investigations, or (4) use grade-level appropriate statistics to analyze data.

6.P.1A.6 Construct explanations of phenomena using (1) primary or secondary scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.

6.P.1A.7 Construct and analyze scientific arguments to support claims, explanations, or designs using evidence from observations, data, or informational texts.

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6.P.1A.8 Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) identify and/or fill gaps in knowledge. Communicate using the conventions and expectations of scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.

6.P.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

6.P.1B.1 Construct devices or design solutions using scientific knowledge to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the device or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

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GRADE SIX
EARTH SCIENCE: EARTH'S WEATHER AND CLIMATE

Standard 6.E.2: The student will demonstrate an understanding of the interactions within Earth's systems (flow of energy) that regulate weather and climate.

6.E.2A. Conceptual Understanding: Earth's atmosphere, an envelope of gases that surround the planet, makes conditions on Earth suitable for living things and influences weather. Water is always moving between the atmosphere (troposphere) and the surface of Earth as a result of the force of gravity and energy from the Sun. The Sun is the driving energy source for heating Earth and for the circulation of Earth's atmosphere.

Performance Indicators: Students who demonstrate this understanding can:

6.E.2A.1 Develop and use models to exemplify the properties of the atmosphere (including the gases, temperature and pressure differences, and altitude changes) and the relative scale in relation to the size of Earth.

6.E.2A.2 Critically analyze scientific arguments based on evidence for and against how different phenomena (natural and human induced) may contribute to the composition of Earth's atmosphere.

6.E.2A.3 Construct explanations of the processes involved in the cycling of water through Earth's systems (including transpiration, evaporation, condensation and crystallization, precipitation, and downhill flow of water on land).

6.E.2B. Conceptual Understanding: The complex patterns of changes and movement of water in the atmosphere determined by winds, landforms, ocean temperatures and currents, and convection are major determinants of local weather patterns and climate. Technology has enhanced our ability to measure and predict weather patterns.

Performance Indicators: Students who demonstrate this understanding can:

6.E.2B.1 Analyze and interpret data from weather conditions (including wind speed and direction, air temperature, humidity, cloud types, and air pressure), weather maps, satellites, and radar to predict local weather patterns and conditions.

6.E.2B.2 Develop and use models to explain how relationships between the movement and interactions of air masses, high and low pressure systems, and frontal boundaries result in weather conditions and storms (including thunderstorms, hurricanes and tornadoes).

6.E.2B.3 Develop and use models to represent how solar energy and convection impact Earth's weather patterns and climate conditions (including global winds, the jet stream, and ocean currents).

6.E.2B.4 Construct explanations for how climate is determined in an area (including latitude, elevation, shape of the land, distance from water, global winds, and ocean currents).

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GRADE SIX
PHYSICAL SCIENCE: ENERGY TRANSFER AND CONSERVATION

Standard 6.P.3: The student will demonstrate an understanding of the properties of energy, the transfer and conservation of energy, and the relationship between energy and forces.

6.P.3A. Conceptual Understanding: Energy manifests itself in multiple forms, such as mechanical (kinetic energy and potential energy), electrical, chemical, radiant (solar), and thermal energy. According to the principle of conservation of energy, energy cannot be created nor destroyed, but it can be transferred from one place to another and transformed between systems.

Performance Indicators: Students who demonstrate this understanding can:

6.P.3A.1 Analyze and interpret data to describe the properties and compare sources of different forms of energy (including mechanical, electrical, chemical, radiant, and thermal).

6.P.3A.2 Develop and use models to exemplify the conservation of energy as it is transformed from kinetic to potential (gravitational and elastic) and vice versa.

6.P.3A.3 Construct explanations for how energy is conserved as it is transferred and transformed in electrical circuits.

6.P.3A.4 Develop and use models to exemplify how magnetic fields produced by electrical energy flow in a circuit is interrelated in electromagnets, generators, and simple electrical motors.

6.P.3A.5 Develop and use models to describe and compare the directional transfer of heat through convection, radiation, and conduction.

6.P.3A.6 Design and test devices that minimize or maximize heat transfer by conduction, convection, or radiation.

6.P.3B. Conceptual Understanding: Energy transfer occurs when two objects interact thereby exerting force on each other. It is the property of an object or a system that enables it to do work (force moving an object over a distance). Machines are governed by this application of energy, work, and conservation of energy.

Performance Indicators: Students who demonstrate this understanding can:

6.P.3B.1 Plan and conduct controlled scientific investigations to provide evidence for how the design of simple machines (including levers, pulleys, inclined planes) helps transfer mechanical energy by reducing the amount of force required to do work.

6.P.3B.2 Design and test solutions that improve the efficiency of a machine by reducing the input energy (effort) or the amount of energy transferred to the surrounding environment as it moves an object.

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GRADE SIX
LIFE SCIENCE: DIVERSITY OF LIFE – CLASSIFICATION AND ANIMALS

Standard 6.L.4: The student will demonstrate an understanding of how scientists classify organisms and how the structures, processes, behaviors, and adaptations of animals allow them to survive.

6.L.4A. Conceptual Understanding: Life is the quality that differentiates living things (organisms) from nonliving objects or those that were once living. All organisms are made up of cells, need food and water, a way to dispose of waste, and an environment in which they can live. Because of the diversity of life on Earth, scientists have developed a way to organize groups of organisms according to their characteristic traits, making it easier to identify and study them.

Performance Indicators: Students who demonstrate this understanding can:

6.L.4A.1 Obtain and communicate information to support claims that living organisms (1) obtain and use resources for energy, (2) respond to stimuli, (3) reproduce, and (4) grow and develop.

6.L.4A.2 Develop and use models to classify organisms based on the current hierarchical taxonomic structure (including the kingdoms of protists, plants, fungi, and animals).

6.L.4B. Conceptual Understanding: The Animal Kingdom includes a diversity of organisms that have many characteristics in common. Classification of animals is based on structures that function in growth, reproduction, and survival. Animals have both structural and behavioral adaptations that increase the chances of reproduction and survival in changing environments.

Performance Indicators: Students who demonstrate this understanding can:

6.L.4B.1 Analyze and interpret data related to the diversity of animals to support claims that all animals (vertebrates and invertebrates) share common characteristics.

6.L.4B.2 Obtain and communicate information to explain how the structural adaptations and processes of animals allow for defense, movement, or resource obtainment.

6.L.4B.3 Construct explanations of how animal responses (including hibernation, migration, grouping, and courtship) to environmental stimuli allow them to survive and reproduce.

6.L.4B.4 Obtain and communicate information to compare and classify innate and learned behaviors in animals.

6.L.4B.5 Analyze and interpret data to compare how endothermic and ectothermic animals respond to changes in environmental temperature.

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GRADE SIX

LIFE SCIENCE: DIVERSITY OF LIFE – PROTISTS, FUNGI AND PLANTS

Standard 6.L.5: The student will demonstrate an understanding of the structures, processes, and responses that allow protists, fungi, and plants to survive and reproduce.

6.L.5A. Conceptual Understanding: The Protist Kingdom is one of the most diverse groups and includes organisms that have characteristics similar to but are not classified as plants, animals, or fungi. These microorganisms live in moist environments and vary in how they obtain energy and move. The Fungi Kingdom consists of organisms that do not make their own food (heterotrophs) but obtain their nutrition through external absorption. Fungi can be grouped by their growth habit or fruiting structure and respond to changes in the environmental stimuli similar to plants.

Performance Indicators: Students who demonstrate this understanding can:

6.L.5A.1 Analyze and interpret data from observations to compare how the structures of protists (including euglena, paramecium, and amoeba) and fungi allow them to obtain energy and explore their environment.

6.L.5A.2 Analyze and interpret data to describe how fungi respond to external stimuli (including temperature, light, touch, water, and gravity).

6.L.5B. Conceptual Understanding: The Plant Kingdom consists of organisms that primarily make their own food (autotrophs) and are commonly classified based on internal structures that function in the transport of food and water. Plants have structural and behavioral adaptations that increase the chances of reproduction and survival in changing environments.

Performance Indicators: Students who demonstrate this understanding can:

6.L.5B.1 Construct explanations of how the internal structures of vascular and nonvascular plants transport food and water.

6.L.5B.2 Analyze and interpret data to explain how the processes of photosynthesis, respiration, and transpiration work together to meet the needs of plants.

6.L.5B.3 Develop and use models to compare structural adaptations and processes that flowering plants use for defense, survival and reproduction.

6.L.5B.4 Plan and conduct controlled scientific investigations to determine how changes in environmental factors (such as air, water, light, minerals, or space) affect the growth and development of a flowering plant.

6.L.5B.5 Analyze and interpret data to describe how plants respond to external stimuli (including temperature, light, touch, water, and gravity).

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GRADE 7 OVERVIEW

In grades six through eight, the standards and performance indicators for the science and engineering practices and core science content, transition students to developing and planning controlled investigations to create more explicit and detailed models and explanations. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom. Science in the middle school provides students with the foundation to be successful in high school science courses, by providing a range of content in the life, earth, and physical sciences.

These academic standards and performance indicators establish the practices and core content that South Carolina's students should know and be able to do by the end of grade seven.

The four core areas of the grade seven standards include:

- Classification and Conservation of Matter
- Organization in Living Systems
- Heredity – Inheritance and Variation of Traits
- Interactions of Living Systems and the Environment

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for their grade level. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to provide a wide variety of experiences, materials, and instructional strategies that accommodate a broad range of individual differences. These standards support active engagement in learning. Classrooms will need to be supplied with the materials and equipment necessary to complete scientific investigations

The academic standards and performance indicators for grade seven should be the basis for the development of classroom and grade-level assessments. In addition, these standards and performance indicators will be the basis for the development of items on the state-required South Carolina Palmetto Assessment of State Standards (SC-PASS). Students must demonstrate knowledge of the science and engineering practices and core content ideas in preparation for future science courses.

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GRADE SEVEN
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 7.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

7.P.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

7.P.1A.1 Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge claims.

7.P.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

7.P.1A.3 Plan and conduct controlled scientific investigation to answer questions, test hypotheses, and develop explanations: (1) formulate scientific questions and testable hypotheses, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

7.P.1A.4. Analyze and interpret data from informational texts, observations, measurements, or investigations using a range of methods (such as tabulation, graphing, or statistical analysis) to (1) reveal patterns and construct meaning or (2) support hypotheses, explanations, claims, or designs.

7.P.1A.5 Use mathematical and computational thinking to (1) use and manipulate appropriate metric units, (2) collect and analyze data, (3) express relationships between variables for models and investigations, or (4) use grade-level appropriate statistics to analyze data.

7.P.1A.6 Construct explanations of phenomena using (1) primary or secondary scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.

7.P.1A.7 Construct and analyze scientific arguments to support claims, explanations, or designs using evidence from observations, data, or informational texts.

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7.P.1A.8 Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) identify and/or fill gaps in knowledge. Communicate using the conventions and expectations of scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.

7.P.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

7.P.1B.1 Construct devices or design solutions using scientific knowledge to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the device or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

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GRADE SEVEN
PHYSICAL SCIENCE: CLASSIFICATION AND CONSERVATION OF MATTER

Standard 7.P.2: The student will demonstrate an understanding of the structure and properties of matter and that matter is conserved as it undergoes changes.

7.P.2A. Conceptual Understanding: All substances are composed of one or more elements. Elements are pure substances which contain only one kind of atom. The periodic table organizes these elements based on similar properties. Compounds are substances composed of two or more elements. Chemical formulas can be used to describe compounds.

Performance Indicators: Students who demonstrate this understanding can:

7.P.2A.1 Develop and use simple atomic models to illustrate the components of elements (including the relative position and charge of protons, neutrons, and electrons).

7.P.2A.2 Obtain and use information about elements (including chemical symbol, atomic number, atomic mass, and group or family) to describe the organization of the periodic table.

7.P.2A.3 Analyze and interpret data to describe and classify matter as pure substances (elements or compounds) or mixtures (heterogeneous or homogeneous) based on composition.

7.P.2A.4 Construct explanations for how compounds are classified as ionic (metal bonded to nonmetal) or covalent (nonmetals bonded together) using chemical formulas.

7.P.2B. Conceptual Understanding: Substances (such as metals or acids) are identified according to their physical or chemical properties. Changes to substances can either be physical or chemical. Many substances react chemically with other substances to form new substances with different properties. According to the law of conservation of matter, total mass does not change in a chemical reaction.

7.P.2B.1 Analyze and interpret data to describe substances using physical properties (including state, boiling/melting point, density, conductivity, color, hardness, and magnetic properties) and chemical properties (the ability to burn or rust).

7.P.2B.2 Use mathematical and computational thinking to describe the relationship between the mass, volume, and density of a given substance.

7.P.2B.3 Analyze and interpret data to compare the physical properties, chemical properties (neutralization to form a salt, reaction with metals), and pH of various solutions and classify solutions as acids or bases.

7.P.2B.4 Plan and conduct controlled scientific investigations to answer questions about how physical and chemical changes affect the properties of different substances.

7.P.2B.5 Develop and use models to explain how chemical reactions are supported by the law of conservation of matter.

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GRADE SEVEN
LIFE SCIENCE: ORGANIZATION IN LIVING SYSTEMS

Standard 7.L.3: The student will demonstrate an understanding of how the levels of organization within organisms support the essential functions of life.

7.L.3A. Conceptual Understanding: Cells are the most basic unit of any living organism. All organisms are composed of one (unicellular) or many cells (multicellular) and require food and water, a way to dispose of waste, and an environment in which they can live in order to survive. Through the use of technology, scientists have discovered special structures within individual cells that have specific functions that allow the cell to grow, survive, and reproduce. Bacteria are one-celled organisms found almost everywhere and can be both helpful and harmful. They can be simply classified by their size, shape and whether or not they can move.

Performance Indicators: Students who demonstrate this understanding can:

7.L.3A.1 Obtain and communicate information to support claims that (1) organisms are made of one or more cells, (2) cells are the basic unit of structure and function of organisms, and (3) cells come only from existing cells.

7.L.3A.2 Analyze and interpret data from observations to describe different types of cells and classify cells as plant, animal, protist, or bacteria.

7.L.3A.3 Develop and use models to explain how the relevant structures within cells (including cytoplasm, cell membrane, cell wall, nucleus, mitochondria, chloroplasts, lysosomes, and vacuoles) function to support the life of plant, animal, and bacterial cells.

7.L.3A.4 Construct scientific arguments to support claims that bacteria are both helpful and harmful to other organisms and the environment.

7.L.3B. Conceptual Understanding: Multicellular organisms (including humans) are complex systems with specialized cells that perform specific functions. Organs and organ systems are composed of cells that function to serve the needs of cells which in turn serve the needs of the organism.

Performance Indicators: Students who demonstrate this understanding can:

7.L.3B.1 Develop and use models to explain how the structural organizations within multicellular organisms function to serve the needs of the organism.

7.L.3B.2 Construct explanations for how systems in the human body (including circulatory, respiratory, digestive, excretory, nervous, and musculoskeletal systems) work together to support the essential life functions of the body.

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GRADE SEVEN
LIFE SCIENCE: HEREDITY – INHERITANCE AND VARIATION OF TRAITS

Standard 7.L.4: The student will demonstrate an understanding of how genetic information is transferred from parent to offspring and how environmental factors and the use of technologies influence the transfer of genetic information.

7.L.4A. Conceptual Understanding: Inheritance is the key process causing similarities between parental organisms and their offspring. Organisms that reproduce sexually transfer genetic information (DNA) to their offspring. This transfer of genetic information through inheritance leads to greater similarity among individuals within a population than between populations. Technology allows humans to influence the transfer of genetic information.

Performance Indicators: Students who demonstrate this understanding can:

7.L.4A.1 Obtain and communicate information about the relationship between genes and chromosomes to construct explanations of their relationship to inherited characteristics.

7.L.4A.2 Construct explanations for how genetic information is transferred from parent to offspring in organisms that reproduce sexually.

7.L.4A.3 Develop and use models (Punnett squares) to describe and predict patterns of the inheritance of single genetic traits from parent to offspring (including dominant and recessive traits, incomplete dominance, and codominance).

7.L.4A.4 Use mathematical and computational thinking to predict the probability of phenotypes and genotypes based on patterns of inheritance.

7.L.4A.5 Construct scientific arguments using evidence to support claims for how changes in genes (mutations) may have beneficial, harmful, or neutral effects on organisms.

7.L.4A.6 Construct scientific arguments using evidence to support claims concerning the advantages and disadvantages of the use of technology (such as selective breeding, genetic engineering, or biomedical research) in influencing the transfer of genetic information.

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GRADE SEVEN
ECOLOGY: INTERACTIONS OF LIVING SYSTEMS AND THE ENVIRONMENT

Standard 7.E.5: The student will demonstrate an understanding of how organisms interact with and respond to the biotic and abiotic components of their environments.

7.E.5A. Conceptual Understanding: In all ecosystems, organisms and populations of organisms depend on their environmental interactions with other living things (biotic factors) and with physical (abiotic) factors (such as light, temperature, water, or soil quality). Disruptions to any component of an ecosystem can lead to shifts in its diversity and abundance of populations.

Performance Indicators: Students who demonstrate this understanding can:

7.E.5A.1 Develop and use models to describe the characteristics of the levels of organization within ecosystems (including species, populations, communities, ecosystems, and biomes).

7.E.5A.2 Construct explanations of how soil quality (including composition, texture, particle size, permeability, and pH) affects the characteristics of an ecosystem using evidence from soil profiles.

7.E.5A.3 Analyze and interpret data to predict changes in the number of organisms within a population when certain changes occur to the physical environment (such as changes due to natural hazards or limiting factors).

7.E.5B. Conceptual Understanding: Organisms in all ecosystems interact with and depend upon each other. Organisms with similar needs compete for limited resources. Food webs and energy pyramids are models that demonstrate how energy is transferred within an ecosystem.

Performance Indicators: Students who demonstrate this understanding can:

7.E.5B.1 Develop and use models to explain how organisms interact in a competitive or mutually beneficial relationship for food, shelter, or space (including competition, mutualism, commensalism, parasitism, and predator-prey relationships).

7.E.5B.2 Develop and use models (food webs and energy pyramids) to exemplify how the transfer of energy in an ecosystem supports the concept that energy is conserved.

7.E.5B.3 Analyze and interpret data to predict how changes in the number of organisms of one species affects the balance of an ecosystem.

7.E.5B.4 Define problems caused by the introduction of a new species in an environment and design devices or solutions to minimize the impact(s) to the balance of an ecosystem.

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GRADE 8 OVERVIEW

In grades six through eight, the standards and performance indicators for the science and engineering practices and core science content, transition students to developing and planning controlled investigations to create more explicit and detailed models and explanations. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom. Science in the middle school provides students with the foundation to be successful in high school science courses, by providing a range of content in the life, earth, and physical sciences.

These academic standards and performance indicators establish the practices and core content that South Carolina's students should know and be able to do by the end of grade eight.

The five core areas of the grade eight standards include:

- Forces and Motion
- Waves
- Earth's Place in the Universe
- Earth Systems and Resources
- Earth's History and Diversity of Life

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for their grade level. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to provide a wide variety of experiences, materials, and instructional strategies that accommodate a broad range of individual differences. These standards support active engagement in learning. Classrooms will need to be supplied with the materials and equipment necessary to complete scientific investigations

The academic standards and performance indicators for grade eight should be the basis for the development of classroom and grade-level assessments. In addition, these standards and performance indicators will be the basis for the development of items on the state-required South Carolina Palmetto Assessment of State Standards (SC-PASS). Students must demonstrate knowledge of the science and engineering practices and core content ideas in preparation for future science courses.

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GRADE EIGHT
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 8.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

8.P.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

8.P.1A.1 Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge claims.

8.P.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

8.P.1A.3 Plan and conduct controlled scientific investigations to answer questions, test hypotheses, and develop explanations: (1) formulate scientific questions and testable hypotheses, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

8.P.1A.4 Analyze and interpret data from informational texts, observations, measurements, or investigations using a range of methods (such as tabulation, graphing, or statistical analysis) to (1) reveal patterns and construct meaning or (2) support hypotheses, explanations, claims, or designs.

8.P.1A.5 Use mathematical and computational thinking to (1) use and manipulate appropriate metric units, (2) collect and analyze data, (3) express relationships between variables for models and investigations, or (4) use grade-level appropriate statistics to analyze data.

8.P.1A.6 Construct explanations of phenomena using (1) primary or secondary scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.

8.P.1A.7 Construct and analyze scientific arguments to support claims, explanations, or designs using evidence from observations, data, or informational texts.

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8.P.1A.8 Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) identify and/or fill gaps in knowledge. Communicate using the conventions and expectations of scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.

8.P.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

8.P.1B.1 Construct devices or design solutions using scientific knowledge to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the device or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

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GRADE EIGHT
PHYSICAL SCIENCE: FORCES AND MOTION

Standard 8.P.2: The student will demonstrate an understanding of the effects of forces on the motion and stability of an object.

8.P.2A. Conceptual Understanding: Motion occurs when there is a change in position of an object with respect to a reference point. The final position of an object is determined by measuring the change in position and direction of the segments along a trip. While the speed of the object may vary during the total time it is moving, the average speed is the result of the total distance divided by the total time taken. Forces acting on an object can be balanced or unbalanced. Varying the amount of force or mass will affect the motion of an object. Inertia is the tendency of objects to resist any change in motion.

Performance Indicators: Students who demonstrate this understanding can:

8.P.2A.1 Plan and conduct controlled scientific investigations to test how varying the amount of force or mass of an object affects the motion (speed and direction), shape, or orientation of an object.

8.P.2A.2 Develop and use models to compare and predict the resulting effect of balanced and unbalanced forces on an object's motion in terms of magnitude and direction.

8.P.2A.3 Construct explanations for the relationship between the mass of an object and the concept of inertia (Newton's First Law of Motion).

8.P.2A.4 Analyze and interpret data to support claims that for every force exerted on an object there is an equal force exerted in the opposite direction (Newton's Third Law of Motion).

8.P.2A.5 Analyze and interpret data to describe and predict the effects of forces (including gravitational and friction) on the speed and direction of an object.

8.P.2A.6 Use mathematical and computational thinking to generate graphs that represent the motion of an object's position and speed as a function of time.

8.P.2A.7 Use mathematical and computational thinking to describe the relationship between the speed and velocity (including positive and negative expression of direction) of an object in determining average speed (v=d/t).

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GRADE EIGHT
PHYSICAL SCIENCE: WAVES

Standard 8.P.3: The student will demonstrate an understanding of the properties and behaviors of waves.

8.P.3A. Conceptual Understanding: Waves (including sound and seismic waves, waves on water, and light waves) have energy and transfer energy when they interact with matter. Waves are a repeating pattern of motion that transfers energy from place to place without overall displacement of matter. All types of waves have some features in common. When waves interact, they superimpose upon or interfere with each other resulting in changes to the amplitude. Major modern technologies are based on waves and their interactions with matter.

Performance Indicators: Students who demonstrate this understanding can:

8.P.3A.1 Construct explanations of the relationship between matter and energy based on the characteristics of mechanical and light waves.

8.P.3A.2 Develop and use models to exemplify the basic properties of waves (including frequency, amplitude, wavelength, and speed).

8.P.3A.3 Analyze and interpret data to describe the behavior of waves (including refraction, reflection, transmission, and absorption) as they interact with various materials.

8.P.3A.4 Analyze and interpret data to describe the behavior of mechanical waves as they intersect.

8.P.3A.5 Construct explanations for how humans see color as a result of the transmission, absorption, and reflection of light waves by various materials.

8.P.3A.6 Obtain and communicate information about how various instruments are used to extend human senses by transmitting and detecting waves (such as radio, television, cell phones, and wireless computer networks) to exemplify how technological advancements and designs meet human needs.

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GRADE EIGHT
EARTH SCIENCE: EARTH'S PLACE IN THE UNIVERSE

Standard 8.E.4: The student will demonstrate an understanding of the universe and the predictable patterns caused by Earth's movement in the solar system.

8.E.4A. Conceptual Understanding: Earth's solar system is part of the Milky Way Galaxy, which is one of many galaxies in the universe. The planet Earth is a tiny part of a vast universe that has developed over a span of time beginning with a period of extreme and rapid expansion.

Performance Indicators: Students who demonstrate this understanding can:

8.E.4A.1 Obtain and communicate information to model the position of the Sun in the universe, the shapes and composition of galaxies, and the measurement unit needed to identify star and galaxy locations.

8.E.4A.2 Construct and analyze scientific arguments to support claims that the universe began with a period of extreme and rapid expansion using evidence from the composition of stars and gases and the motion of galaxies in the universe.

8.E.4B. Conceptual Understanding: Earth's solar system consists of the Sun and other objects that are held in orbit around the Sun by its gravitational pull on them. Motions within the Earth-Moon-Sun system have effects that can be observed on Earth.

Performance Indicators: Students who demonstrate this understanding can:

8.E.4B.1 Obtain and communicate information to model and compare the characteristics and movements of objects in the solar system (including planets, moons, asteroids, comets, and meteors).

8.E.4B.2 Construct explanations for how gravity affects the motion of objects in the solar system and tides on Earth.

8.E.4B.3 Develop and use models to explain how seasons, caused by the tilt of Earth's axis as it orbits the Sun, affects the length of the day and the amount of heating on Earth's surface.

8.E.4B.4 Develop and use models to explain how motions within the Sun-Earth-Moon system cause Earth phenomena (including day and year, moon phases, solar and lunar eclipses, and tides).

8.E.4B.5 Obtain and communicate information to describe how data from technologies (including telescopes, spectroscopes, satellites, space probes) provide information about objects in the solar system and the universe.

8.E.4B.6 Analyze and interpret data from the surface features of the Sun (including photosphere, corona, sunspots, prominences, and solar flares) to predict how these features may affect Earth.

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GRADE EIGHT
EARTH SCIENCE: EARTH SYSTEMS AND RESOURCES

Standard 8.E.5: The student will demonstrate an understanding of the processes that alter the structure of Earth and provide resources for life on the planet.

8.E.5A. Conceptual Understanding: All Earth processes are the result of energy flowing and matter cycling within and among Earth's systems. Because Earth's processes are dynamic and interactive in nature, the surface of Earth is constantly changing. Earth's hot interior is a main source of energy that drives the cycling and moving of materials. Plate tectonics is the unifying theory that explains the past and current crustal movements at the Earth's surface. This theory provides a framework for understanding geological history.

Performance Indicators: Students who demonstrate this understanding can:

8.E.5A.1 Develop and use models to explain how the processes of weathering, erosion, and deposition change surface features in the environment.

8.E.5A.2 Use the rock cycle model to describe the relationship between the processes and forces that create igneous, sedimentary, and metamorphic rocks.

8.E.5A.3 Obtain and communicate information about the relative position, density, and composition of Earth's layers to describe the crust, mantle, and core.

8.E.5A.4 Construct explanations for how the theory of plate tectonics accounts for (1) the motion of lithospheric plates, (2) the geologic activities at plate boundaries, and (3) the changes in landform areas over geologic time.

8.E.5A.5 Construct and analyze scientific arguments to support claims that plate tectonics accounts for (1) the distribution of fossils on different continents, (2) the occurrence of earthquakes, and (3) continental and ocean floor features (including mountains, volcanoes, faults and trenches).

8.E.5B. Conceptual Understanding: Natural processes can cause sudden or gradual changes to Earth's systems. Some may adversely affect humans such as volcanic eruptions or earthquakes. Mapping the history of natural hazards in a region, combined with an understanding of related geological forces can help forecast the locations and likelihoods of future events.

Performance Indicators: Students who demonstrate this understanding can:

8.E.5B.1 Analyze and interpret data to describe patterns in the location of volcanoes and earthquakes related to tectonic plate boundaries, interactions, and hot spots.

8.E.5B.2 Construct explanations of how forces inside Earth result in earthquakes and volcanoes.

8.E.5B.3 Define problems that may be caused by a catastrophic event resulting from plate movements and design possible devices or solutions to minimize the effects of that event on Earth's surface and/or human structures.

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8.E.5C. Conceptual Understanding: Humans depend upon many Earth resources – some renewable over human lifetimes and some nonrenewable or irreplaceable. Resources are distributed unevenly around the planet as a result of past geological processes.

Performance Indicators: Students who demonstrate this understanding can:

8.E.5C.1 Obtain and communicate information regarding the physical and chemical properties of minerals, ores, and fossil fuels to describe their importance as Earth resources.

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GRADE EIGHT
EARTH SCIENCE: EARTH'S HISTORY AND DIVERSITY OF LIFE

Standard 8.E.6: The student will demonstrate an understanding of Earth's geologic history and its diversity of life over time.

8.E.6A. Conceptual Understanding: The geologic time scale interpreted from rock strata provides a way to organize major historical events in Earth's history. Analysis of rock strata and the fossil record, which documents the existence, diversity, extinction, and change of many life forms throughout history, provide only relative dates, not an absolute scale. Changes in life forms are shaped by Earth's varying geological conditions.

Performance Indicators: Students who demonstrate this understanding can:

8.E.6A.1 Develop and use models to organize Earth's history (including era, period, and epoch) according to the geologic time scale using evidence from rock layers.

8.E.6A.2 Analyze and interpret data from index fossil records and the ordering of rock layers to infer the relative age of rocks and fossils.

8.E.6A.3 Construct explanations from evidence for how catastrophic events (including volcanic activities, earthquakes, climatic changes, and the impact of an asteroid/comet) may have affected the conditions on Earth and the diversity of its life forms.

8.E.6A.4 Construct and analyze scientific arguments to support claims that different types of fossils provide evidence of (1) the diversity of life that has been present on Earth, (2) relationships between past and existing life forms, and (3) environmental changes that have occurred during Earth's history.

8.E.6A.5 Construct explanations for why most individual organisms, as well as some entire taxonomic groups of organisms, that lived in the past were never fossilized.

8.E.6B. Conceptual Understanding: Adaptation by natural selection acting over generations is one important process by which species change in response to changes in environmental conditions. The resources of biological communities can be used within sustainable limits, but if the ecosystem becomes unbalanced in ways that prevent the sustainable use of resources, then ecosystem degradation and species extinction can occur.

Performance Indicators: Students who demonstrate this understanding can:

8.E.6B.1 Construct explanations for how biological adaptations and genetic variations of traits in a population enhance the probability of survival in a particular environment.

8.E.6B.2 Obtain and communicate information to support claims that natural and human-made factors can contribute to the extinction of species.

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Academic Standards and Performance Indicators for Science

High School Course Standards

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In grades nine through twelve, the standards and performance indicators for the science and engineering practices and core science content for the high school courses transition students to developing more abstract models and explanations to understand concepts in greater detail and sophistication as they build from experiences in kindergarten through grade eight. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

These courses should not only serve as the foundation for advanced studies at the secondary level and in institutions of higher education but should also provide students with the science skills that are necessary for informed decision making regarding scientific societal questions and to lay the foundation for skills necessary for science related technical careers.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for the course. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

In South Carolina, students are required to have a minimum of three (3) science units for high school graduation. Students must also pass a high school course in science in which an end-of-course examination is administered. At the time this document was written, the required course was Biology.

BIOLOGY 1 OVERVIEW

The academic standards and performance indicators establish the practices and core content for all Biology courses in South Carolina high schools. The core ideas within the standards are not meant to represent an equal division of material and concepts. Therefore, the number of indicators per core idea should not be expected to be equal, nor should equal numbers of performance indicators within each standard be expected.

The five core areas of the Biology 1 course standards include:

- Cells as a System
- Energy Transfer
- Heredity – Inheritance and Variation of Traits
- Biological Evolution – Unity and Diversity
- Ecosystem Dynamics

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for the course. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to make decisions concerning the structure and content of Biology 1 courses. All biology courses must include instruction in the practices of science and engineering, allowing students to engage in problem solving, decision making, critical thinking, and applied learning. All biology courses are laboratory courses requiring a minimum of 30% hands-on investigation. Biology laboratories will need to be stocked with the materials and equipment necessary to complete investigations.

The academic standards and performance indicators for Biology 1 should be the basis for the development of classroom and course-level assessments. In addition, the academic standards and performance indicators for Biology 1 will be the basis for the development of the items on the state-required End-of-Course Examination Program (EOCEP) for Biology 1.

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BIOLOGY 1
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected in this course. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard H.B.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

H.B.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

H.B.1A.1 Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge scientific arguments or claims.

H.B.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

H.B.1A.3 Plan and conduct controlled scientific investigations to answer questions, test hypotheses, and develop explanations: (1) formulate scientific questions and testable hypotheses based on credible scientific information, (2) identify materials, procedures, and variables, (3) use appropriate laboratory equipment, technology, and techniques to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

H.B.1A.4 Analyze and interpret data from informational texts and data collected from investigations using a range of methods (such as tabulation, graphing, or statistical analysis) to (1) reveal patterns and construct meaning, (2) support or refute hypotheses, explanations, claims, or designs, or (3) evaluate the strength of conclusions.

H.B.1A.5 Use mathematical and computational thinking to (1) use and manipulate appropriate metric units, (2) express relationships between variables for models and investigations, and (3) use grade-level appropriate statistics to analyze data.

H.B.1A.6 Construct explanations of phenomena using (1) primary or secondary scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.

H.B.1A.7 Construct and analyze scientific arguments to support claims, explanations, or designs using evidence and valid reasoning from observations, data, or informational texts.

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H.B.1A.8 Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) identify and/or fill gaps in knowledge. Communicate using the conventions and expectations of scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.

H.B.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

H.B.1B.1 Construct devices or design solutions using scientific knowledge to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the device or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

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BIOLOGY 1
CELLS AS A SYSTEM

Standard H.B.2: The student will demonstrate the understanding that the essential functions of life take place within cells or systems of cells.

H.B.2A. Conceptual Understanding: The essential functions of a cell involve chemical reactions that take place between many different types of molecules (including carbohydrates, lipids, proteins and nucleic acids) that are catalyzed by enzymes.

Performance Indicators: Students who demonstrate this understanding can:

H.B.2A.1 Construct explanations of how the structures of carbohydrates, lipids, proteins, and nucleic acids (including DNA and RNA) are related to their functions in organisms.

H.B.2A.2 Plan and conduct investigations to determine how various environmental factors (including temperature and pH) affect enzyme activity and the rate of biochemical reactions.

H.B.2B. Conceptual Understanding: Organisms and their parts are made of cells. Cells are the structural units of life and have specialized substructures that carry out the essential functions of life. Viruses lack cellular organization and therefore cannot independently carry out all of the essential functions of life.

Performance Indicators: Students who demonstrate this understanding can:

H.B.2B.1 Develop and use models to explain how specialized structures within cells (including the nucleus, chromosomes, cytoskeleton, endoplasmic reticulum, ribosomes and Golgi complex) interact to produce, modify, and transport proteins. Models should compare and contrast how prokaryotic cells meet the same life needs as eukaryotic cells without similar structures.

H.B.2B.2 Collect and interpret descriptive data on cell structure to compare and contrast different types of cells (including prokaryotic versus eukaryotic, and animal versus plant versus fungal).

H.B.2B.3 Obtain information to contrast the structure of viruses from that of cells and to explain, in general, why viruses must use living cells to reproduce.

H.B.2C. Conceptual Understanding: Transport processes which move materials into and out of the cell serve to maintain the homeostasis of the cell.

Performance Indicators: Students who demonstrate this understanding can:

H.B.2C.1 Develop and use models to exemplify how the cell membrane serves to maintain homeostasis of the cell through both active and passive transport processes.

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H.B.2C.2 Ask scientific questions to define the problems that organisms face in maintaining homeostasis within different environments (including water of varying solute concentrations).

H.B.2C.3 Analyze and interpret data to explain the movement of molecules (including water) across a membrane.

H.B.2D. Conceptual Understanding: The cells of multicellular organisms repeatedly divide to make more cells for growth and repair. During embryonic development, a single cell gives rise to a complex, multicellular organism through the processes of both cell division and differentiation.

Performance Indicators: Students who demonstrate this understanding can:

H.B.2D.1 Construct models to explain how the processes of cell division and cell differentiation produce and maintain complex multicellular organisms.

H.B.2D.2 Develop and use models to exemplify the changes that occur in a cell during the cell cycle (including changes in cell size, chromosomes, cell membrane/cell wall, and the number of cells produced) and predict, based on the models, what might happen to a cell that does not progress through the cycle correctly.

H.B.2D.3 Construct explanations for how the cell cycle is monitored by check point systems and communicate possible consequences of the continued cycling of abnormal cells.

H.B.2D.4 Construct scientific arguments to support the pros and cons of biotechnological applications of stem cells using examples from both plants and animals.

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BIOLOGY 1
ENERGY TRANSFER

Standard H.B.3: The student will demonstrate the understanding that all essential processes within organisms require energy which in most ecosystems is ultimately derived from the Sun and transferred into chemical energy by the photosynthetic organisms of that ecosystem.

H.B.3A. Conceptual Understanding: Cells transform energy that organisms need to perform essential life functions through a complex sequence of reactions in which chemical energy is transferred from one system of interacting molecules to another.

Performance Indicators: Students who demonstrate this understanding can:

H.B.3A.1 Develop and use models to explain how chemical reactions among ATP, ADP, and inorganic phosphate act to transfer chemical energy within cells.

H.B.3A.2 Develop and revise models to describe how photosynthesis transforms light energy into stored chemical energy.

H.B.3A.3 Construct scientific arguments to support claims that chemical elements in the sugar molecules produced by photosynthesis may interact with other elements to form amino acids, lipids, nucleic acids or other large organic molecules.

H.B.3A.4 Develop models of the major inputs and outputs of cellular respiration (aerobic and anaerobic) to exemplify the chemical process in which the bonds of food molecules are broken, the bonds of new compounds are formed and a net transfer of energy results. Use the models to explain common exercise phenomena (such as lactic acid buildup, changes in breathing during and after exercise, cool down after exercise).

H.B.3A.5 Plan and conduct scientific investigations or computer simulations to determine the relationship between variables that affect the processes of fermentation and/or cellular respiration in living organisms and interpret the data in terms of real-world phenomena.

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BIOLOGY 1
HEREDITY – INHERITANCE AND VARIATION OF TRAITS

Standard H.B.4: The student will demonstrate an understanding of the specific mechanisms by which characteristics or traits are transferred from one generation to the next via genes.

H.B.4A. Conceptual Understanding: Each chromosome consists of a single DNA molecule. Each gene on the chromosome is a particular segment of DNA. The chemical structure of DNA provides a mechanism that ensures that information is preserved and transferred to subsequent generations.

Performance Indicators: Students who demonstrate this understanding can:

H.B.4A.1 Develop and use models at different scales to explain the relationship between DNA, genes, and chromosomes in coding the instructions for characteristic traits transferred from parent to offspring.

H.B.4A.2 Develop and use models to explain how genetic information (DNA) is copied for transmission to subsequent generations of cells (mitosis).

H.B.4B. Conceptual Understanding: In order for information stored in DNA to direct cellular processes, a gene needs to be transcribed from DNA to RNA and then must be translated by the cellular machinery into a protein or an RNA molecule. The protein and RNA products from these processes determine cellular activities and the unique characteristics of an individual. Modern techniques in biotechnology can manipulate DNA to solve human problems.

Performance Indicators: Students who demonstrate this understanding can:

H.B.4B.1 Develop and use models to describe how the structure of DNA determines the structure of resulting proteins or RNA molecules that carry out the essential functions of life.

H.B.4B.2 Obtain, evaluate and communicate information on how biotechnology (including gel electrophoresis, plasmid-based transformation and DNA fingerprinting) may be used in the fields of medicine, agriculture, and forensic science.

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H.B.4C. Conceptual Understanding: Sex cells are formed by a process of cell division in which the number of chromosomes per cell is halved after replication. With the exception of sex chromosomes, for each chromosome in the body cells of a multicellular organism, there is a second similar, but not identical, chromosome. Although these pairs of similar chromosomes can carry the same genes, they may have slightly different alleles. During meiosis the pairs of similar chromosomes may cross and trade pieces. One chromosome from each pair is randomly passed on to form sex cells resulting in a multitude of possible genetic combinations. The cell produced during fertilization has one set of chromosomes from each parent.

Performance Indicators: Students who demonstrate this understanding can:

H.B.4C.1 Develop and use models of sex cell formation (meiosis) to explain why the DNA of the daughter cells is different from the DNA of the parent cell.

H.B.4C.2 Analyze data on the variation of traits among individual organisms within a population to explain patterns in the data in the context of transmission of genetic information.

H.B.4C.3 Construct explanations for how meiosis followed by fertilization ensures genetic variation among offspring within the same family and genetic diversity within populations of sexually reproducing organisms.

H.B.4D. Conceptual Understanding: Imperfect transmission of genetic information may have positive, negative, or no consequences to the organism. DNA replication is tightly regulated and remarkably accurate, but errors do occur and result in mutations which (rarely) are a source of genetic variation.

Performance Indicators: Students who demonstrate this understanding can:

H.B.4D.1 Develop and use models to explain how mutations in DNA that occur during replication (1) can affect the proteins that are produced or the traits that result and (2) may or may not be inherited.

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BIOLOGY 1
BIOLOGICAL EVOLUTION – UNITY AND DIVERSITY

Standard H.B.5: The student will demonstrate an understanding of biological evolution and the unity and diversity of life on Earth.

H.B.5A. Conceptual Understanding: Scientific evidence from the fields of anatomy, embryology, biochemistry, and paleontology underlie the theory of biological evolution. The similarities and differences in DNA sequences, amino acid sequences, anatomical features and fossils all provide information about patterns of descent with modification. Organisms resemble their ancestors because genetic information is transferred from ancestor to offspring during reproduction.

Performance Indicators: Students who demonstrate this understanding can:

H.B.5A.1 Analyze scientific data to explain how multiple lines of evidence (including DNA or amino acid sequences, anatomical and embryological features, fossils, and artificial selection) are used to investigate common ancestry and descent with modification.

H.B.5A.2 Explain how scientists use data from a variety of sources to investigate and critically analyze aspects of the theory of biological evolution.

H.B.5A.3 Construct and interpret a phylogenetic tree, based on anatomical evidence, of the degree of relatedness among various organisms and revise the model based on the inclusion of molecular (such as DNA and/or amino acid sequence) evidence.

H.B.5B. Conceptual Understanding: Biological evolution occurs primarily when natural selection acts on the genetic variation in a population and changes the distribution of traits in that population over multiple generations.

Performance Indicators: Students who demonstrate this understanding can:

H.B.5B.1 Critically analyze and interpret data to explain that natural selection results from four factors: (1) the potential for a population to increase in number, (2) the genetic variation among individuals in a species due to sexual reproduction and mutation (3) competition for a limited supply of resources, and (4) the ensuing proliferation of those individuals that are better able to survive and reproduce in that environment.

H.B.5B.2 Conduct investigations by simulating several generations of natural selection to investigate how changes in environmental conditions may lead to changes in selective pressure on a population of organisms.

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H.B.5C. Conceptual Understanding: According to the theory of biological evolution, natural selection results in populations that are adapted to a particular environment at a particular time. Changes in the physical environment have contributed to the expansion, emergence, or extinction of the Earth's species. Biodiversity is increased by the formation of new species (speciation) and decreased by the loss of species (extinction). Modern classification of Earth's biodiversity is based on the relationships of organisms to one another.

Performance Indicators: Students who demonstrate this understanding can:

H.B.5C.1 Analyze and interpret data, using the principles of natural selection, to make predictions about the long term biological changes that may occur within two populations of the same species that become geographically isolated from one another.

H.B.5C.2 Construct scientific arguments using data on how changes in environmental conditions could result in (1) the expansion of some species, (2) the emergence of new species over time, or (3) the extinction of other species.

H.B.5C.3 Use models of the current three-domain, six-kingdom tree of life to explain how scientists classify organisms and how classification systems are revised over time as discoveries provide new evidence.

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BIOLOGY 1
ECOSYSTEM DYNAMICS

Standard H.B.6: The student will demonstrate an understanding that ecosystems are complex, interactive systems that include both biological communities and physical components of the environment.

H.B.6A. Conceptual Understanding: Ecosystems have carrying capacities, which are limits to the numbers of organisms and populations they can support. Limiting factors include the availability of biotic and abiotic resources and challenges such as predation, competition, and disease.

Performance Indicators: Students who demonstrate this understanding can:

H.B.6A.1 Analyze and interpret data that depict changes in the abiotic and biotic components of an ecosystem over time or space (such as percent change, average change, correlation and proportionality) and propose hypotheses about possible relationships between the changes in the abiotic components and the biotic components of the environment.

H.B.6A.2 Use mathematical and computational thinking to support claims that limiting factors affect the number of individuals that an ecosystem can support.

H.B.6B. Conceptual Understanding: Photosynthesis and cellular respiration are important components of the carbon cycle, in which carbon is exchanged between the biosphere, atmosphere, oceans, and geosphere through chemical, physical, geological, and biological processes.

Performance Indicators: Students who demonstrate this understanding can:

H.B.6B.1 Develop and use models of the carbon cycle, which include the interactions between photosynthesis, cellular respiration and other processes that release carbon dioxide, to evaluate the effects of increasing atmospheric carbon dioxide on natural and agricultural ecosystems.

H.B.6B.1 Analyze and interpret quantitative data to construct an explanation for the effects of greenhouse gases (such as carbon dioxide and methane) on the carbon cycle and global climate.

H.B.6C. Conceptual Understanding: A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively stable over long periods of time. Fluctuations in conditions can challenge the functioning of ecosystems in terms of resource and habitat availability.

Performance Indicators: Students who demonstrate this understanding can:

H.B.6C.1 Construct scientific arguments to support claims that the changes in the biotic and abiotic components of various ecosystems over time affect the ability of an ecosystem to maintain homeostasis.

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BIOLOGY 1
ECOSYSTEM DYNAMICS *(CONTINUED)*

H.B.6D. Conceptual Understanding: Sustaining biodiversity maintains ecosystem functioning and productivity which are essential to supporting and enhancing life on Earth. Humans depend on the living world for the resources and other benefits provided by biodiversity. Human activity can impact biodiversity.

Performance Indicators: Students who demonstrate this understanding can:

H.B.6D.1 Design solutions to reduce the impact of human activity on the biodiversity of an ecosystem.

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CHEMISTRY 1 OVERVIEW

The academic standards and performance indicators establish the practices and core content for all Chemistry 1 courses in South Carolina high schools. The core ideas within the standards are not meant to represent an equal division of material and concepts. Therefore the number of indicators per core idea should not be expected to be equal, nor should equal numbers of performance indicators within each standard be expected.

The six core areas of the Chemistry 1 standards include:

- Atomic Structure and Nuclear Processes
- Bonding and Chemical Formulas
- States of Matter
- Solutions, Acids, and Bases
- Chemical Reactions
- Thermochemistry and Chemical Kinetics

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for the course. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to make decisions concerning the structure and content of Chemistry 1. All chemistry courses must include instruction in the practices of science and engineering, allowing students to engage in problem solving, decision making, critical thinking, and applied learning. All chemistry courses are laboratory courses requiring a minimum of 30 % hands-on investigation. Chemistry laboratories will need to be stocked with the materials and equipment necessary to complete scientific investigations.

The academic standards and performance indicators for Chemistry 1 should be the basis for the development of classroom and course-level assessments.

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CHEMISTRY 1
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected in this course. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard H.C.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

H.C.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

H.C.1A.1 Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge scientific arguments or claims.

H.C.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

H.C.1A.3 Plan and conduct controlled scientific investigations to answer questions, test hypotheses, and develop explanations: (1) formulate scientific questions and testable hypotheses based on credible scientific information, (2) identify materials, procedures, and variables, (3) use appropriate laboratory equipment, technology, and techniques to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

H.C.1A.4 Analyze and interpret data from informational texts and data collected from investigations using a range of methods (such as tabulation, graphing, or statistical analysis) to (1) reveal patterns and construct meaning, (2) support or refute hypotheses, explanations, claims, or designs, or (3) evaluate the strength of conclusions.

H.C.1A.5 Use mathematical and computational thinking to (1) use and manipulate appropriate metric units, (2) express relationships between variables for models and investigations, and (3) use grade-level appropriate statistics to analyze data.

H.C.1A.6 Construct explanations of phenomena using (1) primary or secondary scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.

H.C.1A.7 Construct and analyze scientific arguments to support claims, explanations, or designs using evidence and valid reasoning from observations, data, or informational texts.

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H.C.1A.8 Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) identify and/or fill gaps in knowledge. Communicate using the conventions and expectations of scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.

H.C.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

H.C.1B.1 Construct devices or design solutions using scientific knowledge to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the device or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

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CHEMISTRY 1
ATOMIC STRUCTURE AND NUCLEAR PROCESSES

Standard H.C.2: The student will demonstrate an understanding of atomic structure and nuclear processes.

H.C.2A. Conceptual Understanding: The existence of atoms can be used to explain the structure and behavior of matter. Each atom consists of a charged nucleus, consisting of protons and neutrons, surrounded by electrons. The interactions of these electrons between and within atoms are the primary factors that determine the chemical properties of matter. In a neutral atom the number of protons is the same as the number of electrons.

Performance Indicators: Students who demonstrate this understanding can:

H.C.2A.1 Obtain and communicate information to describe and compare subatomic particles with regard to mass, location, charge, electrical attractions and repulsions, and impact on the properties of an atom.

H.C.2A.2 Use the Bohr and quantum mechanical models of atomic structure to exemplify how electrons are distributed in atoms.

H.C.2A.3 Analyze and interpret absorption and emission spectra to support explanations that electrons have discrete energy levels.

H.C.2B. Conceptual Understanding: In nuclear fusion, lighter nuclei combine to form more stable heavier nuclei and in nuclear fission heavier nuclei are split to form lighter nuclei. The energies in fission and fusion reactions exceed the energies in usual chemical reactions.

Performance Indicators: Students who demonstrate this understanding can:

H.C.2B.1 Obtain and communicate information to compare alpha, beta, and gamma radiation in terms of mass, charge, penetrating power, and their practical applications (including medical benefits and associated risks).

H.C.2B.2 Develop models to exemplify radioactive decay and use the models to explain the concept of half-life and its use in determining the age of materials (such as radiocarbon dating or the use of radioisotopes to date rocks).

H.C.2B.3 Obtain and communicate information to compare and contrast nuclear fission and nuclear fusion and to explain why the ability to produce low energy nuclear reactions would be a scientific breakthrough.

H.C.2B.4 Use mathematical and computational thinking to explain the relationship between mass and energy in nuclear reactions ($E=mc^2$).

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CHEMISTRY 1
BONDING AND CHEMICAL FORMULAS

Standard H.C.3: The student will demonstrate an understanding of the structures and classification of chemical compounds.

H.C.3A. Conceptual Understanding: Elements are made up of only one kind of atom. With increasing atomic number, a predictable pattern for the addition of electrons exists. This pattern is the basis for the arrangement of elements in the periodic table. The chemical properties of an element are determined by an element's electron configuration. Elements can react to form chemical compounds/molecules that have unique properties determined by the kinds of atoms combined to make up the compound/molecule. Essentially, the ways in which electrons are involved in bonds determines whether ionic or covalent bonds are formed. Compounds have characteristic shapes that are determined by the type and number of bonds formed.

Performance Indicators: Students who demonstrate this understanding can:

H.C.3A.1 Construct explanations for the formation of molecular compounds via sharing of electrons and for the formation of ionic compounds via transfer of electrons.

H.C.3A.2 Use the periodic table to write and interpret the formulas and names of chemical compounds (including binary ionic compounds, binary covalent compounds, and straight-chain alkanes up to six carbons).

H.C.3A.3 Analyze and interpret data to predict the type of bonding (ionic or covalent) and the shape of simple compounds by using the Lewis dot structures and oxidation numbers.

H.C.3A.4 Plan and conduct controlled scientific investigations to generate data on the properties of substances and analyze the data to infer the types of bonds (including ionic, polar covalent, and nonpolar covalent) in simple compounds.

H.C.3A.5 Develop and use models (such as Lewis dot structures, structural formulas, or ball-and-stick models) of simple hydrocarbons to exemplify structural isomerism.

H.C.3A.6 Construct explanations of how the basic structure of common natural and synthetic polymers is related to their bulk properties.

H.C.3A.7 Analyze and interpret data to determine the empirical formula of a compound and the percent composition of a compound.

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CHEMISTRY 1
STATES OF MATTER

Standard H.C.4: The student will demonstrate an understanding of the structure and behavior of the different states of matter.

H.C.4A. Conceptual Understanding: Matter can exist as a solid, liquid, or gas, and in very high-energy states, as plasma. In general terms, for a given chemical, the particles making up the solid are at a lower energy state than the liquid phase, which is at a lower energy state than the gaseous phase. The changes from one state of matter into another are energy dependent. The behaviors of gases are dependent on the factors of pressure, volume, and temperature.

Performance Indicators: Students who demonstrate this understanding can:

H.C.4A.1 Develop and use models to explain the arrangement and movement of the particles in solids, liquids, gases**,** and plasma as well as the relative strengths of their intermolecular forces.

H.C.4A.2 Analyze and interpret heating curve graphs to explain that changes from one state of matter to another are energy dependent.

H.C.4A.3 Conduct controlled scientific investigations and use models to explain the behaviors of gases (including the proportional relationships among pressure, volume, and temperature).

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CHEMISTRY 1
SOLUTIONS, ACIDS, AND BASES

Standard H.C.5: The student will demonstrate an understanding of the nature and properties of various types of chemical solutions.

H.C.5A. Conceptual Understanding: Solutions can exist in any of three physical states: gas, liquid, or solid. Solution concentrations can be expressed by specifying the relative amounts of solute and solvent. The nature of the solute, the solvent, the temperature, and the pressure can affect solubility. Solutes can affect such solvent properties as freezing point, boiling point, and vapor pressure. Acids, bases, and salts have characteristic properties. Several definitions of acids and bases are used in chemistry.

Performance Indicators: Students who demonstrate this understanding can:

H.C.5A.1 Obtain and communicate information to describe how a substance can dissolve in water by dissociation, dispersion, or ionization and how intermolecular forces affect solvation.

H.C.5A.2 Analyze and interpret data to explain the effects of temperature and pressure on the solubility of solutes in a given amount of solvent.

H.C.5A.3 Use mathematical representations to analyze the concentrations of unknown solutions in terms of molarity and percent by mass.

H.C.5A.4 Analyze and interpret data to describe the properties of acids, bases, and salts.

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CHEMISTRY 1
CHEMICAL REACTIONS

Standard H.C.6: The student will demonstrate an understanding of the types, the causes, and the effects of chemical reactions.

H.C.6A. Conceptual Understanding: A chemical reaction occurs when elements and/or compounds interact, resulting in a rearrangement of the atoms of these elements and/or compounds to produce substances with unique properties. Mass is conserved in chemical reactions. Reactions tend to proceed in a direction that favors lower energies. Chemical reactions can be categorized using knowledge about the reactants to predict products. Chemical reactions are quantifiable. When stress is applied to a chemical system that is in equilibrium, the system will shift in a direction that reduces that stress.

Performance Indicators: Students who demonstrate this understanding can:

H.C.6A.1 Develop and use models to predict the products of chemical reactions (1) based upon movements of ions; (2) based upon movements of protons; and (3) based upon movements of electrons.

H.C.6A.2 Use Le Châtelier's principle to predict shifts in chemical equilibria resulting from changes in concentration, pressure, and temperature.

H.C.6A.3 Plan and conduct controlled scientific investigations to produce mathematical evidence that mass is conserved in chemical reactions.

H.C.6A.4 Use mathematical and computational thinking to predict the amounts of reactants required and products produced in specific chemical reactions.

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CHEMISTRY 1
THERMOCHEMISTRY AND CHEMICAL KINETICS

Standard H.C.7: The student will demonstrate an understanding of the conservation of energy and energy transfer.

H.C.7A. Conceptual Understanding: The first law of thermodynamics states that the amount of energy in the universe is constant. An energy diagram is used to represent changes in the energy of the reactants and products in a chemical reaction. Enthalpy refers to the heat content that is present in an atom, ion, or compound. While some chemical reactions occur spontaneously, other reactions may require that activation energy be lowered in order for the reaction to occur.

Performance Indicators: Students who demonstrate this understanding can:

H.C.7A.1 Analyze and interpret data from energy diagrams and investigations to support claims that the amount of energy released or absorbed during a chemical reaction depends on changes in total bond energy.

H.C.7A.2 Use mathematical and computational thinking to write thermochemical equations and draw energy diagrams for the combustion of common hydrocarbon fuels and carbohydrates, given molar enthalpies of combustion.

H.C.7A.3 Plan and conduct controlled scientific investigations to determine the effects of temperature, surface area, stirring, concentration of reactants, and the presence of various catalysts on the rate of chemical reactions.

H.C.7A.4 Develop and use models to explain the relationships between collision frequency, the energy of collisions, the orientation of molecules, activation energy, and the rates of chemical reactions.

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PHYSICS 1 OVERVIEW

The academic standards and performance indicators establish the practices and core content for all Physics 1 courses in South Carolina schools. The two core ideas are subdivided and are not meant to represent an equal division of material and concepts. Therefore the number of indicators per core idea should not be expected to be equal, nor should equal numbers of performance indicators within each standard be expected.

The two core areas of the Physics 1 standards include:

- Interactions and Forces: Patterns of Linear Motion; Forces and Changes in Motion; Interactions and Contact Forces; Interactions and Noncontact Forces and Fields
- Interactions and Energy: Conservation and Energy Transfer and Work; Mechanical Energy; Thermal Energy; Sound, Electricity and Magnetism; Radiation; Nuclear Energy

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for the course. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to make decisions concerning the structure and content of Physics 1. All Physics courses must include instruction in the practices of science and engineering, allowing students to engage in problem solving, decision making, critical thinking, and applied learning. All Physics courses are laboratory courses requiring a minimum of 30 % hands-on investigation. Physics laboratories will need to be stocked with the materials and equipment necessary to complete investigations.

The academic standards and performance indicators for Physics 1 should be the basis for the development of classroom and course-level assessments.

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PHYSICS 1
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected in this course. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard H.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

H.P.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

H.P.1A.1 Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge scientific arguments or claims.

H.P.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

H.P.1A.3 Plan and conduct controlled scientific investigations to answer questions, test hypotheses, and develop explanations: (1) formulate scientific questions and testable hypotheses based on credible scientific information, (2) identify materials, procedures, and variables, (3) use appropriate laboratory equipment, technology, and techniques to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

H.P.1A.4 Analyze and interpret data from informational texts and data collected from investigations using a range of methods (such as tabulation, graphing, or statistical analysis) to (1) reveal patterns and construct meaning, (2) support or refute hypotheses, explanations, claims, or designs, or (3) evaluate the strength of conclusions.

H.P.1A.5 Use mathematical and computational thinking to (1) use and manipulate appropriate English and metric units, (2) express relationships between variables for models and investigations, or (3) use grade-level appropriate statistics to analyze data.

H.P.1A.6 Construct explanations of phenomena using (1) primary or secondary scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.

H.P.1A.7 Construct and analyze scientific arguments to support claims, explanations, or designs using evidence and valid reasoning from observations, data, or informational texts.

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H.P.1A.8 Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) identify and/or fill gaps in knowledge. Communicate using the conventions and expectations of scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.

H.P.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

H.P.1B.1 Construct devices or design solutions using scientific knowledge to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the device or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

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PHYSICS 1
INTERACTIONS AND FORCES

Standard H.P.2: The student will demonstrate an understanding of how the interactions among objects and their subsequent motion can be explained and predicted using the concept of forces.

H.P.2A. Conceptual Understanding: The linear motion of an object can be described by its displacement, velocity, and acceleration.

Performance Indicators: Students who demonstrate this understanding can:

H.P.2A.1 Plan and conduct controlled scientific investigations on the straight-line motion of an object to include an interpretation of the object's displacement, time of motion, constant velocity, average velocity, and constant acceleration.

H.P.2A.2 Construct explanations for an object's change in motion using one-dimensional vector addition.

H.P.2A.3 Use mathematical and computational thinking to apply formulas related to an object's displacement, constant velocity, average velocity and constant acceleration. Interpret the meaning of the sign of displacement, velocity, and acceleration.

H.P.2A.4 Develop and use models to represent an object's displacement, velocity, and acceleration (including vector diagrams, data tables, motion graphs, dot motion diagrams, and mathematical formulas).

H.P.2A.5 Construct explanations for what is meant by "constant" velocity and "constant" acceleration (including writing descriptions of the object's motion and calculating the sign and magnitude of the slope of the line on a position-time and velocity-time graph).

H.P.2A.6 Obtain information to communicate the similarities and differences between distance and displacement; speed and velocity; constant velocity and instantaneous velocity; constant velocity and average velocity; and velocity and acceleration.

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PHYSICS 1
INTERACTIONS AND FORCES *(CONTINUED)*

H.P.2B. Conceptual Understanding: The interactions among objects and their subsequent motion can be explained and predicted by analyzing the forces acting on the objects and applying Newton's laws of motion.

Performance Indicators: Students who demonstrate this understanding can:

H.P.2B.1 Plan and conduct controlled scientific investigations involving the motion of an object to determine the relationships among the net force on the object, its mass, and its acceleration (Newton's second law of motion, $F_{net} = ma$) and analyze collected data to construct an explanation of the object's motion using Newton's second law of motion.

H.P.2B.2 Use a free-body diagram to represent the forces on an object.

H.P.2B.3 Use Newton's Third Law of Motion to construct explanations of everyday phenomena (such as a hammer hitting a nail, the thrust of a rocket engine, the lift of an airplane wing, or a book at rest on a table) and identify the force pairs in each given situation involving two objects and compare the size and direction of each force.

H.P.2B.4 Use mathematical and computational thinking to derive the relationship between impulse and Newton's Second Law of Motion.

H.P.2B.5 Plan and conduct controlled scientific investigations to support the Law of Conservation of Momentum in the context of two objects moving linearly (p=mv).

H.P.2B.6 Construct scientific arguments to defend the use of the conservation of linear momentum in the investigation of traffic accidents in which the initial motions of the objects are used to determine the final motions of the objects.

H.P.2B.7 Apply physics principles to design a device that minimizes the force on an object during a collision and construct an explanation for the design.

H.P.2B.8 Develop and use models (such as a computer simulation, drawing, or demonstration) and Newton's Second Law of Motion to construct explanations for why an object moving at a constant speed in a circle is accelerating.

H.P.2B.9 Construct explanations for the practical applications of torque (such as a see-saw, bolt, wrench, and hinged door).

H.P.2B.10 Obtain information to communicate physical situations in which Newton's Second Law of Motion does not apply.

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H.P.2C. Conceptual Understanding: The contact interactions among objects and their subsequent motion can be explained and predicted by analyzing the normal, tension, applied, and frictional forces acting on the objects and by applying Newton's Laws of Motion.

Performance Indicators: Students who demonstrate this understanding can:

H.P.2C.1 Use a free-body diagram to represent the normal, tension (or elastic), applied, and frictional forces on an object.

H.P.2C.2 Plan and conduct controlled scientific investigations to determine the variables that could affect the kinetic frictional force on an object.

H.P.2C.3 Obtain and evaluate information to compare kinetic and static friction.

H.P.2C.4 Analyze and interpret data on force and displacement to determine the spring (or elastic) constant of an elastic material (Hooke's Law, F=-kx), including constructing an appropriate graph in order to draw a line-of-best-fit whose calculated slope will yield the spring constant, *k*.

H.P.2C.5 Use mathematical and computational thinking to apply F_{net} = ma to analyze problems involving contact interactions and gravity.

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PHYSICS 1
INTERACTIONS AND FORCES *(CONTINUED)*

H.P.2D. Conceptual Understanding: The non-contact (at a distance) interactions among objects and their subsequent motion can be explained and predicted by analyzing the gravitational, electric, and magnetic forces acting on the objects and applying Newton's laws of motion. These non-contact forces can be represented as fields.

Performance Indicators: Students who demonstrate this understanding can:

H.P.2D.1 Develop and use models (such as computer simulations, demonstrations, diagrams, and drawings) to explain how neutral objects can become charged and how objects mutually repel or attract each other and include the concept of conservation of charge in the explanation.

H.P.2D.2 Use mathematical and computational thinking to predict the relationships among the masses of two objects, the attractive gravitational force between them, and the distance between them (Newton's Law of Universal Gravitation, $F=Gm_1m_2/r^2$).

H.P.2D.3 Obtain information to communicate how long-term gravitational interactions govern the evolution and maintenance of large-scale structures in the universe (such as the solar system and galaxies) and the patterns of motion within them.

H.P.2D.4 Use mathematical and computational thinking to predict the relationships among the charges of two particles, the attractive or repulsive electrical force between them, and the distance between them (Coulomb's Law. $F=kq_1q_2/r^2$).

H.P.2D.5 Construct explanations for how the non-contact forces of gravity, electricity, and magnetism can be modeled as fields by sketching field diagrams for two given charges, two massive objects, or a bar magnet and use these diagrams to qualitatively interpret the direction and magnitude of the force at a particular location in the field.

H.P.2D.6 Use a free-body diagram to represent the gravitational force on an object.

H.P.2D.7 Use a free-body diagram to represent the electrical force on a charge.

H.P.2D.8 Develop and use models (such as computer simulations, drawings, or demonstrations) to explain the relationship between moving charged particles (current) and magnetic forces and fields.

H.P.2D.9 Use Newton's Law of Universal Gravitation and Newton's second law of motion to explain why all objects near Earth's surface have the same acceleration.

H.P.2D.10 Use mathematical and computational thinking to apply $F_{net} = ma$ to analyze problems involving non-contact interactions, including objects in free fall.

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PHYSICS 1
INTERACTIONS AND ENERGY

Standard H.P.3: The student will demonstrate an understanding of how the interactions among objects can be explained and predicted using the concept of the conservation of energy.

H.P.3A. Conceptual Understanding: Work and energy are equivalent to each other. Work is defined as the product of displacement and the force causing that displacement; this results in the transfer of mechanical energy. Therefore, in the case of mechanical energy, energy is seen as the ability to do work. This is called the work-energy principle. The rate at which work is done (or energy is transformed) is called power. For machines that do useful work for humans, the ratio of useful power output is the efficiency of the machine. For all energies and in all instances, energy in a closed system remains constant.

Performance Indicators: Students who demonstrate this understanding can:

H.P.3A.1 Use mathematical and computational thinking to determine the work done by a constant force (W=Fd).

H.P.3A.2 Use mathematical and computational thinking to analyze problems dealing with the work done on or by an object and its change in energy.

H.P.3A.3 Obtain information to communicate how energy is conserved in elastic and inelastic collisions.

H.P.3A.4 Plan and conduct controlled scientific investigations to determine the power output of the human body.

H.P.3A.5 Obtain and communicate information to describe the efficiency of everyday machines (such as automobiles, hair dryers, refrigerators, and washing machines).

H.P.3B. Conceptual Understanding: Mechanical energy refers to a combination of motion (kinetic energy) and stored energy (potential energy). When only conservative forces act on an object and when no mass is converted to energy, mechanical energy is conserved. Gravitational and electrical potential energy can be modeled as energy stored in the fields created by massive objects or charged particles.

Performance Indicators: Students who demonstrate this understanding can:

H.P.3B.1 Develop and use models (such as computer simulations, drawings, bar graphs, and diagrams) to exemplify the transformation of mechanical energy in simple systems and those with periodic motion and on which only conservative forces act.

H.P.3B.2 Use mathematical and computational thinking to argue the validity of the conservation of mechanical energy in simple systems and those with periodic motion and on which only conservative forces act ($KE = ½ mv^2$, $PE_g = mgh$, $PE_e = ½ kx^2$).

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H.P.3B.3 Use drawings or diagrams to identify positions of relative high and low potential energy in a gravitational and electrical field (with the source of the field being positive as well as negative and the charge experiencing the field being positive as well as negative).

H.P.3C. Conceptual Understanding: When there is a temperature difference between two objects, an interaction occurs in the form of a transfer of thermal energy (heat) from the hotter object to the cooler object. Thermal energy is the total internal kinetic energy of the molecules and/or atoms of a system and is related to temperature, which is the average kinetic energy of the particles of a system. Energy always flows from hot to cold through the processes of conduction, convection, or radiation.

Performance Indicators: Students who demonstrate this understanding can:

H.P.3C.1 Plan and conduct controlled scientific investigations to determine the variables that affect the rate of heat transfer between two objects.

H.P.3C.2 Analyze and interpret data to describe the thermal conductivity of different materials.

H.P.3C.3 Develop and use models (such as a drawing or a small-scale greenhouse) to exemplify the energy balance of the Earth (including conduction, convection, and radiation).

H.P.3D. Conceptual Understanding: Sound is a mechanical, longitudinal wave that is the result of vibrations (kinetic energy) that transfer energy through a medium.

Performance Indicators: Students who demonstrate this understanding can:

H.P.3D.1 Develop and use models (such as drawings) to exemplify the interaction of mechanical waves with different boundaries (sound wave interference) including the formation of standing waves and two-source interference patterns.

H.P.3D.2 Use the principle of superposition to explain everyday examples of resonance (including musical instruments and the human voice).

H.P.3D.3 Develop and use models to explain what happens to the observed frequency of a sound wave when the relative positions of an observer and wave source changes (Doppler effect).

H.P.3D.4 Use mathematical and computational thinking to analyze problems that relate the frequency, period, amplitude, wavelength, velocity, and energy of sound waves.

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PHYSICS 1
INTERACTIONS AND ENERGY *(CONTINUED)*

H.P.3E. Conceptual Understanding: During electric circuit interactions, electrical energy (energy stored in a battery or energy transmitted by a current) is transformed into other forms of energy and transferred to circuit devices and the surroundings. Charged particles and magnets create fields that store energy. Magnetic fields exert forces on moving charged particles. Changing magnetic fields cause electrons in wires to move, creating current.

Performance Indicators: Students who demonstrate this understanding can:

H.P.3E.1 Plan and conduct controlled scientific investigations to determine the relationship between the current and potential drop (voltage) across an Ohmic resistor. Analyze and interpret data to verify Ohm's law, including constructing an appropriate graph in order to draw a line-of-best-fit whose calculated slope will yield *R*, the resistance of the resistor.

H.P.3E.2 Develop and use models (such as circuit drawings and mathematical representations) to explain how an electric circuit works by tracing the path of the electrons and including concepts of energy transformation, transfer, and the conservation of energy and electric charge.

H.P.3E.3 Use mathematical and computational thinking to analyze problems dealing with current, electric potential, resistance, and electric charge.

H.P.3E.4 Use mathematical and computational thinking to analyze problems dealing with the power output of electric devices.

H.P.3E.5 Plan and conduct controlled scientific investigations to determine how connecting resistors in series and in parallel affects the power (brightness) of light bulbs.

H.P.3E.6 Obtain and communicate information about the relationship between magnetism and electric currents to explain the role of magnets and coils of wire in microphones, speakers, generators, and motors.

H.P.3E.7 Design a simple motor and construct an explanation of how this motor transforms electrical energy into mechanical energy and work.

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PHYSICS 1
INTERACTIONS AND ENERGY *(CONTINUED)*

H.P.3F. Conceptual Understanding: During radiant energy interactions, energy can be transferred over long distances without a medium. Radiation can be modeled as an electromagnetic wave or as a stream of discrete packets of energy (photons); all radiation travels at the same speed in a vacuum (speed of light). This electromagnetic radiation is a major source of energy for life on Earth.

Performance Indicators: Students who demonstrate this understanding can:

H.P.3F.1 Construct scientific arguments that support the wave model of light and the particle model of light.

H.P.3F.2 Plan and conduct controlled scientific investigations to determine the interaction between the visible light portion of the electromagnetic spectrum and various objects (including mirrors, lenses, barriers with two slits, and diffraction gratings) and to construct explanations of the behavior of light (reflection, refraction, transmission, interference) in these instances using models (including ray diagrams).

H.P.3F.3 Use drawings to exemplify the behavior of light passing from one transparent medium to another and construct explanations for this behavior.

H.P.3F.4 Use mathematical and computational thinking to analyze problems that relate the frequency, period, amplitude, wavelength, velocity, and energy of light.

H.P.3F.5 Obtain information to communicate the similarities and differences among the different bands of the electromagnetic spectrum (including radio waves, microwaves, infrared, visible light, ultraviolet, and gamma rays) and give examples of devices or phenomena from each band.

H.P.3F.6 Obtain information to construct explanations on how waves are used to produce, transmit, and capture signals and store and interpret information (including ultrasound imaging, telescopes, cell phones, and bar code scanners).

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H.P.3G. Conceptual Understanding: Nuclear energy is energy stored in an atom's nucleus; this energy holds the atom together and is called binding energy. Binding energy is a reflection of the equivalence of mass and energy; the mass of any nucleus is always less than the sum of the masses of the individual constituent nucleons that comprise it. Binding energy is also a measure of the strong nuclear force that exists in the nucleus and is responsible for overcoming the repulsive forces among protons. The strong and weak nuclear forces, gravity, and the electromagnetic force are the fundamental forces in nature. Strong and weak nuclear forces determine nuclear sizes, stability, and rates of radioactive decay. At the subatomic scale, the conservation of energy becomes the conservation of mass-energy.

Performance Indicators: Students who demonstrate this understanding can:

H.P.3G.1 Develop and use models to represent the basic structure of an atom (including protons, neutrons, electrons, and the nucleus).

H.P.3G.2 Develop and use models (such as drawings, diagrams, computer simulations, and demonstrations) to communicate the similarities and differences between fusion and fission. Give examples of fusion and fission reactions and include the concept of conservation of mass-energy.

H.P.3G.3 Construct scientific arguments to support claims for or against the viability of fusion and fission as sources of usable energy.

H.P.3G.4 Use mathematical and computational thinking to predict the products of radioactive decay (including alpha, beta, and gamma decay).

H.P.3G.5 Obtain information to communicate how radioactive decay processes have practical applications (such as food preservation, cancer treatments, fossil and rock dating, and as radioisotopic medical tracers).

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EARTH SCIENCE OVERVIEW

The academic standards and performance indicators establish the practices and core content for all Earth Science courses in South Carolina schools. The core ideas within the standards are not meant to represent an equal division of material and concepts. Therefore the number of indicators per core idea should not be expected to be equal, nor should equal numbers of performance indicators within each standard be expected.

The five core areas of the Earth Science standards include:

- Astronomy
- Earth's Geosphere
- Earth's Paleobiosphere
- Earth's Atmosphere – Weather and Climate
- Earth's Hydrosphere

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for the course. It is critical that educators understand the Science and Engineering Practices are *not* to be taught in isolation. There should *not* be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed *within the content* for each grade level.

Teachers, schools, and districts should use these standards and indicators to make decisions concerning the structure and content of an Earth Science course. All Earth Science courses must include instruction in the practices of science and engineering, allowing students to engage in problem solving, decision making, critical thinking, and applied learning. All Earth Science courses are laboratory courses requiring a minimum of 30% hands-on investigation. Earth Science laboratories will need to be stocked with the materials and equipment necessary to complete investigations.

The academic standards and performance indicators for Earth Science should be the basis for the development of classroom and course-level assessments.

Draft for Education Oversight Committee Approval February 2014

EARTH SCIENCE
SCIENCE AND ENGINEERING PRACTICES

NOTE: Scientific investigations should always be done in the context of content knowledge expected in this course. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard H.E.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

H.E.1A. Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

Performance Indicators: Students who demonstrate this understanding can:

H.E.1A.1 Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge scientific arguments or claims.

H.E.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

H.E.1A.3 Plan and conduct controlled scientific investigations to answer questions, test hypotheses, and develop explanations: (1) formulate scientific questions and testable hypotheses based on credible scientific information, (2) identify materials, procedures, and variables, (3) use appropriate laboratory equipment, technology, and techniques to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

H.E.1A.4 Analyze and interpret data from informational texts and data collected from investigations using a range of methods (such as tabulation, graphing, or statistical analysis) to (1) reveal patterns and construct meaning, (2) support or refute hypotheses, explanations, claims, or designs, or (3) evaluate the strength of conclusions.

H.E.1A.5 Use mathematical and computational thinking to (1) use and manipulate appropriate metric units, (2) express relationships between variables for models and investigations, or (3) use grade-level appropriate statistics to analyze data.

H.E.1A.6 Construct explanations of phenomena using (1) primary or secondary scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.

H.E.1A.7 Construct and analyze scientific arguments to support claims, explanations, or designs using evidence and valid reasoning from observations, data, or informational texts.

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H.E.1A.8 Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) identify and/or fill gaps in knowledge. Communicate using the conventions and expectations of scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.

H.E.1B. Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.

Performance Indicators: Students who demonstrate this understanding can:

H.E.1B.1 Construct devices or design solutions using scientific knowledge to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the device or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

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EARTH SCIENCE
ASTRONOMY

Standard H.E.2: The student will demonstrate an understanding of the structure, properties, and history of the observable universe.

H.E.2A. Conceptual Understanding: Earth is a tiny part of a vast universe that has developed over a huge expanse of time. At the center of Earth's solar system is one local star, the Sun. It is just one of a vast number of stars in the Milky Way Galaxy, which is just one of a vast number of galaxies in the observable universe. The study of the light spectra and brightness of stars is used to identify compositional elements of stars, their movements, and their distances from Earth. Nearly all observable matter in the universe formed and continues to form within the cores of stars. The universe began with a period of extreme and rapid expansion and has been expanding ever since.

Performance Indicators: Students who demonstrate this understanding can:

H.E.2A.1 Construct explanations for how gravity and motion affect the formation and shapes of galaxies (including the Milky Way Galaxy).

H.E.2A.2 Use the Hertzsprung-Russell diagram to classify stars and explain the life cycles of stars (including the Sun).

H.E.2A.3 Construct explanations for how elements are formed using evidence from nuclear fusion occurring within stars and/or supernova explosions.

H.E.2A.4 Construct and analyze scientific arguments to support claims about the origin of the universe (including the red shift of light from distant galaxies, the measured composition of stars and nonstellar gases, and the cosmic background radiation).

H.E.2A.5 Obtain and evaluate information to describe how the use of x-ray, gamma-ray, radio, and visual (reflecting, refracting, and catadioptric) telescopes and computer modeling have increased the understanding of the universe.

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H.E.2B. Conceptual Understanding: The solar system consists of the Sun and a collection of objects of varying sizes and conditions – including planets and their moons – that have predictable patterns of movement. These patterns can be explained by gravitational forces and conservation laws, and in turn explains many large-scale phenomena observed on Earth. Kepler's laws describe common features of the motions of orbiting objects, including their elliptical paths around the Sun. The solar system appears to have formed from a disk of dust and gas, drawn together by gravity.

Performance Indicators: Students who demonstrate this understanding can:

H.E.2B.1 Analyze and interpret data to compare the properties of Earth and other planets (including composition, density, surface expression of tectonics, climate, and conditions necessary for life).

H.E.2B.2 Obtain, evaluate, and communicate information about the properties and features of the moon to support claims that it is unique among other moons in the solar system in its effects on the planet it orbits.

H.E.2B.3 Use mathematical and computational thinking to explain the motion of an orbiting object in the solar system.

H.E.2B.4 Construct explanations for how the solar system was formed.

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EARTH SCIENCE
EARTH'S GEOSPHERE

Standard H.E.3: The student will demonstrate an understanding of the internal and external dynamics of Earth's geosphere.

H.E.3A. Conceptual Understanding: Evidence indicates Earth's interior is divided into a solid inner core, a liquid outer core, a solid (but flowing) mantle and solid crust. Although the crust is solid, it is in constant motion and is recycled through time. Plate tectonics is the unifying theory that explains the past and current movements of the rocks at Earth's surface and provides a coherent account of its geological history. Weathering (physical and chemical) and soil formation are a result of the interactions of Earth's geosphere, hydrosphere, and atmosphere. All forms of resource extraction and land use have associated economic, social, environmental, and geopolitical costs, risks, and benefits. Natural hazards and other geological events have shaped the course of human history.

Performance Indicators: Students who demonstrate this understanding can:

H.E.3A.1 Analyze and interpret data to explain the differentiation of Earth's internal structure using (1) the production of internal heat from the radioactive decay of unstable isotopes, (2) gravitational energy, (3) data from seismic waves, and (4) Earth's magnetic field.

H.E.3A.2 Analyze and interpret data from ocean topography, correlation of rock assemblages, the fossil record, the role of convection current, and the action at plate boundaries to explain the theory of plate tectonics.

H.E.3A.3 Construct explanations of how forces cause crustal changes as evidenced in sea floor spreading, earthquake activity, volcanic eruptions, and mountain building using evidence of tectonic environments (such as mid-ocean ridges and subduction zones).

H.E.3A.4 Use mathematical and computational thinking to analyze seismic graphs to (1) triangulate the location of an earthquake's epicenter and magnitude, and (2) describe the correlation between frequency and magnitude of an earthquake.

H.E.3A.5 Analyze and interpret data to describe the physical and chemical properties of minerals and rocks and classify each based on the properties and environment in which they were formed.

H.E.3A.6 Develop and use models to explain how various rock formations on the surface of Earth result from geologic processes (including weathering, erosion, deposition, and glaciation).

H.E.3A.7 Plan and conduct controlled scientific investigations to determine the factors that affect the rate of weathering.

H.E.3A.8 Analyze and interpret data of soil from different locations to compare the major physical components of soil (such as the amounts of sand, silt, clay, and humus) as evidence of Earth processes in that region producing each type of soil.

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H.E.3B. Conceptual Understanding: The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources. Human transformation of the natural environment can contribute to the frequency and intensity of some natural hazards.

Performance Indicators: Students who demonstrate this understanding can:

H.E.3B.1 Obtain and communicate information to explain how the formation, availability, and use of ores and fossil fuels impact the environment.

H.E.3B.2 Construct scientific arguments to support claims that responsible management of natural resources is necessary for the sustainability of human societies and the biodiversity that supports them.

H.E.3B.3 Analyze and interpret data to explain how natural hazards and other geologic events have shaped the course of human history.

H.E.3B.4 Obtain and evaluate available data on a current controversy regarding human activities which may affect the frequency, intensity, or consequences of natural hazards.

H.E.3B.5 Define problems caused by the impacts of locally significant natural hazards and design possible devices or solutions to reduce the impacts of such natural hazards on human activities.

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EARTH SCIENCE
EARTH'S PALEOBIOSPHERE

Standard H.E.4: The student will demonstrate an understanding of the dynamic relationship between Earth's conditions over geologic time and the diversity of organisms.

H.E.4A. Conceptual Understanding: Living things have changed the makeup of Earth's geosphere, hydrosphere, and atmosphere over geological time. Organisms ranging from bacteria to human beings may contribute to the global carbon cycle. They may influence the global climate by modifying the chemical makeup of the atmosphere. As Earth changes, life on Earth adapts and evolves to those changes. Just as life influences components of the Earth System, changes in the Earth System influences life.

Performance Indicators: Students who demonstrate this understanding can:

H.E.4A.1 Construct scientific arguments to support claims that the physical conditions of Earth enable the planet to support carbon-based life.

H.E.4A.2 Construct explanations for how various life forms have altered the geosphere, hydrosphere and atmosphere over geological time.

H.E.4A.3 Construct explanations of how changes to Earth's surface are related to changes in the complexity and diversity of life using evidence from the geologic time scale.

H.E.4A.4 Obtain and evaluate evidence from rock and fossil records and ice core samples to support claims that Earth's environmental conditions have changed over time.

H.E.4A.5 Develop and use models of various dating methods (including index fossils, ordering of rock layers, and radiometric dating) to estimate geologic time.

H.E.4A.6 Use mathematical and computational thinking to calculate the age of Earth materials using isotope ratios (actual or simulated).

H.E.4A.7 Develop and use models to predict the effects of an environmental change (such as the changing life forms, tectonic change, or human activity) on global carbon cycling.

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EARTH SCIENCE
EARTH'S ATMOSPHERE – WEATHER AND CLIMATE

Standard H.E.5: The student will demonstrate an understanding of the dynamics of Earth's atmosphere.

H.E.5A. Conceptual Understanding: Weather is the condition of the atmosphere at a particular location at a particular time. Weather is primarily determined by the angle and amount (time) of sunlight. Climate is the general weather conditions over a long period of time and is influenced by many factors.

Performance Indicators: Students who demonstrate this understanding can:

H.E.5A.1 Develop and use models to describe the thermal structures (including the changes in air temperature due to changing altitude in the lower troposphere), the gaseous composition, and the location of the layers of Earth's atmosphere.

H.E.5A.2 Develop and use models to predict and explain how the angle of solar incidence and Earth's axial tilt impact (1) the length of daylight, (2) the atmospheric filtration, (3) the distribution of sunlight in any location, and (4) seasonal changes.

H.E.5A.3 Analyze and interpret data to predict local and national weather conditions on the basis of the relationship among the movement of air masses, pressure systems, and frontal boundaries.

H.E.5A.4 Analyze and interpret data of pressure differences, the direction of winds, and areas of uneven heating to explain how convection determines local wind patterns (including land/sea breezes, mountain/valley breezes, Chinook winds, and monsoons).

H.E.5A.5 Construct explanations for the formation of severe weather conditions (including tornadoes, hurricanes, thunderstorms, and blizzards) using evidence from temperature, pressure and moisture conditions.

H.E.5A.6 Develop and use models to exemplify how climate is driven by global circulation patterns.

H.E.5A.7 Construct scientific arguments to support claims of past changes in climate caused by various factors (such as changes in the atmosphere, variations in solar output, Earth's orbit, changes in the orientation of Earth's axis of rotation, or changes in the biosphere).

H.E.5A.8 Analyze scientific arguments regarding the nature of the relationship between human activities and climate change.

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EARTH SCIENCE
EARTH'S HYDROSPHERE

Standard H.E.6: The student will demonstrate an understanding of Earth's freshwater and ocean systems.

H.E.6A. Conceptual Understanding: Water is an essential resource on Earth. Organisms (including humans) on Earth depend on water for life. Its unique physical and chemical properties are important to the dynamics of Earth systems. Multiple factors affect the quality, availability, and distribution of Earth's water.

Performance Indicators: Students who demonstrate this understanding can:

H.E.6A.1 Analyze and interpret data to describe and compare the physical and chemical properties of saltwater and freshwater.

H.E.6A.2 Obtain and communicate information to explain how location, movement, and energy transfers are involved in making water available for use on Earth's surface (including lakes, surface-water drainage basins, freshwater wetlands, and groundwater zones).

H.E.6A.3 Plan and conduct controlled scientific investigations to determine how a change in stream flow might affect areas of erosion and deposition of a meandering alluvial stream.

H.E.6A.4 Analyze and interpret data of a local drainage basin to predict how changes caused by human activity and other factors influence the hydrology of the basin and amount of water available for use in the ecosystem.

H.E.6A.5 Analyze and interpret data to describe how the quality of the water in drainage basins is influenced by natural and human factors (such as land use, domestic and industrial waste, weather/climate conditions, topography of the river channel, pollution, or flooding).

H.E.6A.6 Develop and use models to explain how groundwater processes affect limestone formations leading to the formation of caves and karst topography.

H.E.6A.7 Obtain and communicate information to explain how the convection of ocean water due to temperature and density influence the circulation of oceans.

H.E.6A.8 Develop and use models to describe how waves and currents interact with the ocean shore.

H.E.6A.9 Ask questions about the designs of devices used to control and prevent coastal erosion and flooding and evaluate the designs in terms of the advantages and disadvantages required for solving the problems.

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SOUTH CAROLINA
STATE DEPARTMENT
OF EDUCATION

SC EDUCATION OVERSIGHT COMMITTEE

Reporting facts. Measuring change. Promoting progress.

M E M O R A N D U M

TO: Members, Education Oversight Committee

FROM: Melanie Barton

DATE: January 31, 2014

RE: Governor Haley's Executive Budget

On January 13, 2014 Governor Haley released her Executive Budget for Fiscal Year 2014-15. Below is a summary of those recommendations, focusing on those that reflect the EOC's priorities for public education.

Improving Reading

- $29.5 million in recurring funds for a reading coach in every public elementary school;
- $6 million for summer reading camps, up from $1.5 million in the current fiscal year;
- $5.0 million in funds for professional development for teachers to improve reading instruction; and
- Redirects up to $3.0 million in EIA funds for the half-day four-year-old program to a readiness assessment per EOC recommendation.

Technology

- $10.2 million in EIA recurring funds (same level as in the current fiscal year) to expand bandwidth;
- $29.3 million in non-recurring monies from the Capital Reserve Fund to improve bandwidth, bolster wireless connectivity, and enhance enhancing 1-1 technology initiatives. These funds are allocated to districts based on the poverty index of the district and average daily membership.
- $12.0 million in non-recurring funds for digital instructional materials, up from $4.0 million in the current fiscal year;
- $4.0 million in non-recurring funds for technology-related professional development for teachers; and
- Creation of a technology panel to evaluate technology needs of schools.

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Melanie D. Barton
EXECUTIVE DIRECTOR

Education Finance Act (EFA)

In the current fiscal year, the General Assembly appropriated a base student cost of $2,101. Due to an increase in weighted pupil units, the revised, base student cost is $2,097.57.

The Governor recommended that the EFA be funded at a base student cost of $2,120 and that the EFA be amended to include the EOC's funding model that includes the following weights:

1. General education weights – Each student is essentially funded at the base student cost or a 1.0. Students with disabilities have higher education weights based on their disability. These weights are not changed.

2. Compensatory weights that address the factors that detract from high academic achievement over time and are documented in research are included. Weights of 0.20 are funded for children and for children with limited English proficiency need intensive English language instruction.

3. Program weights fund programs designed to address individual student academic or artistic needs.

- *Students in need of remediation who are not performing at grade level need intervention such during and after regular school day at a weight of 0.15. .*

- *Students who are classified as gifted and talented and/or taking IB and AP courses need additional services at a weight of 0.15..*

- Students who are young adults aged 17 to 21 who are pursuing a diploma or GED through adult education or other means but are no longer part of the regular school setting should receive additional funds for specialized assistance at a weight of 0.20.

The total increase for the EFA was $134.7 million which included $3.8 million in "transition" funds to guarantee that no district would receive less funds in 2014-15 than in the current fiscal year.

EIA funds for High Achieving Students were eliminated ($26.6 million) since a weight was included for Gifted and Talented Students in the EFA and EIA funds for Students at Risk of School Failure was reduced by $56.6 million.

Other Issues

The Governor recommended funding of the Center of Excellence focused on College and Career Readiness per the EOC recommendation.

The Governor concurred with EOC recommendations concerning proviso changes to the African American History proviso, to the funding of PSAT/PLAN assessments, the creation of a career and technology advisory panel, and to the restoration of funds to school districts for formative assessment funding.

The Governor also included a proviso requiring EOC to investigate whether academic eligibility criteria for state-supported scholarships are deterring high school students from enrolling in dual enrollment or higher level courses.

Corresponding Proviso Recommendations as Proposed by the Governor

1.3. (SDE: EFA Formula/Base Student Cost Inflation Factor) To the extent possible within available funds, it is the intent of the General Assembly to provide for one hundred percent of full implementation of the Education Finance Act to include an inflation factor projected by the Division of Budget and Analyses to match inflation wages of public school employees in the Southeast. The base student cost for the current fiscal year has been determined to be ~~$2,101~~ *$2,120*. ~~In Fiscal Year 2013-14~~ *For the current fiscal year*, the total pupil count is projected to be ~~698,924~~ *708,231*. The average per pupil funding is projected to be ~~$5,147~~ *$5,290* state, ~~$1,185~~ *$1,154* federal, and ~~$4,855~~ *$4,996* local. This is an average total funding level of ~~$11,187~~ *$11,440* excluding revenues of local bond issues. For ~~Fiscal Year 2013-14~~ *the current fiscal year* the South Carolina Public Charter School District shall receive and distribute state EFA funds to the charter school as determined by one hundred percent of the current year's base student cost, as funded by the General Assembly multiplied by the weighted students pupils enrolled in the charter school, which must be subject to adjustment for student attendance.

The Budget and Control Board, Research and Statistics Division, must post in a prominent place on their website for each school district projections, including the per pupil state, federal and local revenues, excluding revenues of local bond issues, for the current fiscal year. Also, as soon as practicable, upon determining the exact numbers regarding pupil count and funding, the Budget and Control Board, Research and Statistics Division, shall also post on their website the 135-day average daily membership for each school district and per pupil state, federal and local revenues, excluding revenues of local bond issues, based on the most recent audited financial statement as reported annually pursuant to Section 59-17-100. The Department of Education and the Education Oversight Committee shall provide in a prominent place on their internet websites a link to the information posted by the Budget and Control Board, Research and Statistics Division, including the projected numbers and the exact numbers.

For the current fiscal year, the pupil classification weightings are as follows:

(1) K-12 pupils or base students including homebound students..... 1.00

(2) Weights for students with disabilities as prescribed in Section 59-20-40(1)(c) Special Programs

(3) Additional weights for personalized instruction:

(A) Precareer and Career Technology..... 1.20

(B) Gifted and Talented 0.15

(C) Academic Assistance 0.15

(D) Young Adult Education..... 0.20

(E) Limited English Proficiency 0.20

(F) Pupils in Poverty 0.20

Students may receive multiple weights for personalized instruction; however, within each weight, students should only be counted once. These weights are defined below:

Gifted and talented students are students who are classified as academically or artistically gifted and talented or who are enrolled in Advanced Placement (AP) and International Baccalaureate (IB) courses in high school.

Students in need of academic assistance are students who do not meet state standards in mathematics, English language arts, or both on state approved assessments in grades 3 through 12. The additional weight generates funds needed to provide additional instructional services to these students.

Young adults are students between the ages of 17 and 21 who are pursuing a diploma or alternative high school credential like a GED through adult education or other means but are no longer part of the regular school setting.

Students with limited English proficiency are students who require intensive English language instruction programs and whose families require specialized parental involvement intervention.

Students in poverty are students eligible for the free or reduced price Federal lunch program and/or are eligible for Medicaid.

1.83. *(SDE: Reading Coaches) (A) Funds appropriated for Reading Coaches must be allocated to school districts by the Department of Education as follows:*

1) for each elementary school in which twenty percent or more of the students scored Not Met on the reading and research test in the most recent year for which such data are available, the school district shall be eligible to receive the lesser of either $62,730 or the actual cost of salary and benefits for a full-time reading coach; and

2) for each elementary school in which fewer than twenty percent of the students scored Not Met on the reading and research test during the same period, the school district shall be eligible to receive the lesser of either $31,365 or fifty percent of the actual cost of salary and benefits for a full-time reading coach. A school district must provide a 1:1 local match for each state dollar provided under this paragraph.

(B) By accepting these funds, a school district warrants that they will not be used to supplant existing school district expenditures.

(C) Funds appropriated for Reading Coaches are intended to be used to provide elementary schools with reading coaches, who shall serve as job-embedded, stable resources for professional development throughout schools in order to generate improvement in reading and literacy instruction and student achievement. Reading coaches will support and provide initial and ongoing professional development to teachers in each of the major reading components, as needed, based on an analysis of student performance data. Reading coaches may also provide similar services relating to the administration and analysis of instructional assessments and the provision of differentiated instruction and intensive intervention. Specific services offered by a dedicated reading coach may include but are not limited to:

1) modeling effective instructional strategies for teachers;

2) facilitating study groups;

3) training teachers in data analysis and using data to differentiate instruction;

4) coaching and mentoring colleagues;

5) providing daily support to classroom teachers;

6) working with teachers to ensure that research-based reading programs are implemented with fidelity;

7) helping to increase instructional density to meet the needs of all students;

8) helping lead and support reading leadership teams at his or her school;

9) continuing to increase his or her knowledge base in best practices in reading instruction, intervention, and instructional reading strategies;

10) working with all teachers (including content area, and elective areas) in the school he or she serves, prioritizing time for those teachers, activities, and roles that will have the greatest impact on student achievement, namely coaching and mentoring in classrooms; and

11) working frequently with students in whole and small group instruction in the context of modeling and coaching in other teachers' classrooms.

A reading coach must not:

1) be assigned a regular classroom teaching assignment;

2) perform administrative functions that will confuse their role for teachers; or

3) devote a significant portion of his or her time to administering or coordinating assessments.

(D) No later than August 1, 2014, the Department of Education must publish guidelines that define the minimum qualifications for a reading coach for Fiscal Year 2014-15. These guidelines must deem any licensed teacher qualified if he or she:

1) holds a bachelor's degree and an add-on endorsement for literacy, or

2) holds a master's degree in reading or a closely-related field.

Within these guidelines, the Department of Education must also establish a process for Fiscal Year 2014-15 through which an elementary school may be permitted to use the allocation granted under subsection (A) in order to obtain in-school reading coaching services from a department-approved consultant or vendor, in the event that the school is not successful in identifying and directly employing a qualified candidate. The provisions of subsection (A), including the local match requirements, shall also apply to any allocations made pursuant to this paragraph.

(E) The Department of Education must develop procedures for monitoring the use of funds appropriated for Reading Coaches to ensure they are applied to their intended uses and are not redirected for other purposes. The Department of Education may receive up to $100,000 of the funds appropriated for Reading Coaches in order to implement this program, provided that this allocation does not exceed the department's actual costs.

(F) Prior to the close of the current fiscal year, any remaining funds for Reading Coaches, but no more than $5,000,000, shall be distributed by the Department of Education among the school districts containing elementary schools that were eligible for and which elected to receive funding under subsection (A)(1) of this proviso; these funds shall be distributed in proportion to these districts' relative shares of students who scored Not Met on the research and reading test in the most recent year for which such

data are available. Funds distributed under this subsection must be used exclusively to support reading-related professional development for teachers.

(G) The Department of Education shall require:

1) any school district receiving funding under subsection (A) to identify the name and qualifications of the supported reading coach; and

2) any school district receiving funding under subsection (F) to account for the specific amounts and uses of such funds.

(H) Funds appropriated for Reading Coaches shall be retained and carried forward to be used for the same purpose.

1A.3. (SDE-EIA: XII.B - Half Day Program for Four-Year-Olds) ~~Funds~~ *Of the funds* appropriated in Part IA, Section 1, XII.B. for half-day programs for four-year-olds*, up to $3,000,000 must allocated for the administration in the current fiscal year of a formative readiness assessment or assessments that will analyze the literacy, mathematics, and physical, social and emotional behavioral competencies of children in prekindergarten and kindergarten so that students may receive the appropriate support and intervention to succeed in school. The assessments must be approved by the State Board of Education. The remainder of the funds* shall be distributed based on the prior year number of students in kindergarten eligible for free and reduce price lunch *to school districts that are not participating or not eligible to participate in the Child Development Education Pilot Program*.

1A.4. (SDE-EIA: XII.A.3. African-American History) Funds provided for the development of the African-American History curricula may be carried forward into the current fiscal year ~~to be expended for the same purpose~~. *For Fiscal Year 2014-15, not less than 70 percent of the funds carried forward must be expended for the development of additional instructional materials by nonprofit organizations selected through a competitive bid process by the Department of Education. Priority must be given to organizations that have already produced materials that are currently being used by schools and to outreach programs that reflect African-American culture and history and that support literacy efforts.*

1A.19. (SDE-EIA: Assessment) The department is authorized to carry forward into the current fiscal year, prior year state assessment funds for the purpose of paying for state assessment activities not completed by the end of the fiscal year including the scoring of the spring statewide accountability assessment. *PSAT/PLAN reimbursements shall resume in the current fiscal year.*

1A.26. (SDE-EIA: Artistically and Academically High-Achieving Students) ~~EIA funds appropriated for high achieving students must be allocated to districts based on three factors: (1) the number of students served in academic gifted and talented programs based on the prior year's one hundred thirty-five day count of average daily membership adjusted for the current year's forty-five day count and the number of students identified as artistically gifted and talented; (2) the number of students taking Advanced Placement or International Baccalaureate (IB) exams in the prior year; and (3) a per pupil allocation for charter schools~~

~~serving state-identified artistically and academically high-achieving students in core academic classes with an accelerated curriculum that has been verified by the Department of Education to meet the requirements of State Board of Education Regulation 43-220 and if they are serving state-identified artistically and academically high-achieving students in core academic courses which are included on the prior year's Commission on Higher Education's list of transferable courses. The Department of Education shall report to the Senate Education Committee and the House Education and Public Works Committee regarding the allocation and distribution of the funds by June first. At least eighty-five percent of the funds appropriated for each student classified herein must be spent for instruction and instructional support for students who generated the funds. Up to $500,000 of the funds may be retained by the Department of Education for teacher endorsement and certification activities. Districts shall set-aside twelve percent of the funds for serving artistically gifted and talented students in grades three through twelve.~~

~~The board of trustees of a school district electing to charge a fee to the parent or legal guardian of a student taking the Advanced Placement or International Baccalaureate exam is required to develop a policy for such a fee which accounts for the student's ability to pay and at an amount not to exceed the actual test cost. A test fee may not be charged to students eligible for free lunch and must be pro rata for students eligible for reduced price lunch if the parent or legal guardian requests.~~

1A.29. (SDE-EIA: Assessments-Gifted & Talented, Advanced Placement, & International Baccalaureate Exams) Of the funds appropriated and/or authorized for assessment, up to $4,600,000 shall be used for assessments to determine eligibility of students for gifted and talented programs and for the cost of Advanced Placement and International Baccalaureate exams. *The board of trustees of a school district electing to charge a fee to the parent or legal guardian of a student taking the Advanced Placement or International Baccalaureate exam is required to develop a policy for such a fee which accounts for the student's ability to pay and at an amount not to exceed the actual test cost. A test fee may not be charged to students eligible for free lunch and must be pro rata for students eligible for reduced price lunch if the parent or legal guardian requests.*

1A.32. (SDE-EIA: Incentive for National Board Certification After June 30, 2010) Public school classroom teachers to include teachers employed at the special schools or classroom teachers who work with classroom teachers to include teachers employed at the special schools who are certified by the State Board of Education and who complete the application process on or after July 1, 2010 shall be paid a $5,000 salary supplement in the year of achieving certification. The special schools include the Governor's School for Science and Math, Governor's School for the Arts and Humanities, Wil Lou Gray Opportunity School, John de la Howe School, School for the Deaf and the Blind, Felton Lab, Department of Juvenile Justice and Palmetto Unified School District 1. The $5,000 salary supplement shall be added to the annual pay of the teacher, not to exceed ten years of the national certificate. However, the $5,000 supplement shall be adjusted on a pro rata basis for the teacher's FTE and paid to the teacher in accordance with the district's payroll procedure. The Center for Educator Recruitment, Retention, and Advancement (CERRA-South Carolina) shall administer whereby teachers who are United States citizens or permanent resident aliens apply to the National Board for Professional Teaching Standards for certification on or after July 1, 2010. ~~Should the program not be suspended, up to nine~~

~~hundred applications shall be processed annually.~~ Of the funds appropriated in Part IA, Section 1, XII.C.2. for National Board Certification, the Department of Education shall transfer to the Center for Educator Recruitment, Retention, and Advancement (CERRA-South Carolina) the funds necessary for the administration of teachers applying to the National Board for Professional Teaching Standards for certification.

New applications for the salary supplement prescribed in this proviso are suspended for Fiscal Year 2014-15. The Department of Education shall submit a report on the long-term costs of the program to the Senate Finance Committee and the House Ways and Means Committee by November 1, 2014. This proviso does not prohibit school districts from offering a local salary supplement for National Board certified teachers nor does it prohibit a teacher or teacher specialist from seeking National Board certification.

1A.36. (SDE-EIA: Centers of Excellence) Of the funds appropriated for Centers of Excellence, $350,000 must be allocated to the Francis Marion University Center of Excellence to Prepare Teachers of Children of Poverty to expand statewide training for individuals who teach children of poverty through weekend college, non-traditional or alternative learning opportunities. ~~The center also is charged with developing a sequence of knowledge and skills and program of study for add-on certification for teachers specializing in teaching children of poverty.~~ *Furthermore, with increased funds provided, the Commission on Higher Education will fund a new center in Fiscal Year 2014-15 that will provide professional development to teachers to enable them to transform the P-12 experience to create a college-going and career readiness culture that prepares students for postsecondary education and the world of work.*

1A.49. (SDE-EIA: XII.C.2-National Board Certification Incentive) Public school classroom teachers to include teachers employed at the special schools or classroom teachers who work with classroom teachers to include teachers employed at the special schools who are certified by the State Board of Education and who have been certified by the National Board for Professional Teaching Standards or completed the application process prior to July 1, 2010 shall be paid a $7,500 salary supplement beginning July first in the year following the year of achieving certification, beginning with 2009 applicants. The special schools include the Governor's School for Science and Math, Governor's School for the Arts and Humanities, Wil Lou Gray Opportunity School, John de la Howe School, School for the Deaf and the Blind, Felton Lab, Department of Juvenile Justice and Palmetto Unified School District 1. The $7,500 salary supplement shall be added to the annual pay of the teacher for the length of the national certificate. However, the $7,500 supplement shall be adjusted on a pro rata basis for the teacher's FTE and paid to the teacher in accordance with the district's payroll procedure. The Center for Educator Recruitment, Retention, and Advancement (CERRA-South Carolina) shall administer the programs whereby teachers who are United States citizens or permanent resident aliens, and who applied to the National Board for Professional Teaching Standards for certification prior to July 1, 2010, may receive a loan equal to the amount of the application fee. Teachers who applied to the National Board for Professional Teaching Standards for certification prior to July 1, 2010 shall have one-half of the loan principal amount and interest forgiven when the

required portfolio is submitted to the national board. Teachers who applied to the National Board for Professional Teaching Standards for certification prior to July 1, 2010 who attain certification within three years of receiving the loan will have the full loan principal amount and interest forgiven. Teachers who previously submitted a portfolio to the National Board for Professional Teaching Standards for certification under previous appropriation acts, shall receive reimbursement of their certification fee as prescribed under the provisions of the previous appropriation act. Funds collected from educators who are in default of the National Board loan shall be retained and carried forward by the department. The department may retain up to ten percent of the funds collected to offset the administrative costs of loan collection. All other funds shall be retained by the department and used for National Board loan purposes. Of the funds appropriated in Part IA, Section 1, XII.C.2 for National Board Certification, the Department of Education shall transfer to the Center for Educator Recruitment, Retention, and Advancement (CERRA-South Carolina) the funds necessary for the administration of the loan program for teachers who applied to the National Board for Professional Teaching Standards for certification prior to July 1, 2010. In addition, teachers who have applied prior to July 1, 2010 and are certified by the National Board for Professional Teaching Standards shall enter a recertification cycle for their South Carolina certificate consistent with the recertification cycle for national board certification. National board certified teachers who have been certified by the National Board for Professional Teaching Standards or completed the application process prior to July 1, 2010 moving to this State who hold a valid standard certificate from their sending state are exempted from initial certification requirements and are eligible for a professional teaching certificate and continuing contract status. Their recertification cycle will be consistent with national board certification.

Provided, further, that in calculating the compensation for teacher specialists, the Department of Education shall include state and local compensation as defined in Section 59-18-1530 to include local supplements except local supplements for National Board certification. Teacher specialists remain eligible for state supplement for National Board certification.

New applications for the salary supplement prescribed in this proviso are suspended for Fiscal Year 2014-15. The Department of Education shall submit a report on the long-term costs of the program to the Senate Finance Committee and the House Ways and Means Committee by November 1, 2014. This proviso does not prohibit school districts from offering a local salary supplement for National Board certified teachers nor does it prohibit a teacher or teacher specialist from seeking National Board certification.

1A.58. (SDE-EIA: South Carolina Success Program) ~~From the funds in specific appropriations Assessment/Testing, the Department of Education shall issue a request for proposal to provide a statewide South Carolina Success Program, a program to be available to all public school districts and open-enrollment charters in the State of South Carolina. The department may use up to $3,500,000 of the local assessment funds for this program. This program shall provide academic support to students and teachers to help ensure on grade level achievement in reading by making available for grades PreK-8 an online-delivered, interactive reading assessment and research-based intervention program for use both at school and at home. This online program must automatically place students into an individualized on-line curriculum and instruction, provide teachers and administrators with~~

~~immediate reporting, provide recommendations for interventions and teacher lessons, and provide small group instruction lessons. The program must provide computer adaptive assessments at least eight times per year, and teachers, principals, and districts must have immediate on-line reporting to identify those students who are not reading on grade-level and those that are at risk of failing the state reading assessment pursuant to Section 59-18-310 of the 1976 Code, as amended. The program must make available to parents reporting and resources regarding student participation via a home portal. To ensure effective implementation of the program in conjunction with the beginning of the academic school year, the Department of Education shall issue a request for proposal to carry out the requirements of this provision no later than July 5, 2013. Implementation of the program must begin no later than August 15, 2013.~~

1A.61.*(SDE-EIA: Modernize Vocational Equipment) To prioritize the use of funds appropriated to modernize vocational equipment, the Education Oversight Committee must convene an advisory panel composed of directors of career and technology centers, representatives of the South Carolina Technical College System, and private-sector leaders from business, trade, and industry organizations. The panel will review the existing allocations, uses, and impacts of funds appropriated for vocational equipment and recommend statewide funding priorities to support career and technical education goals.*

1A.62.*(SDE-EIA: Teach for America SC) In the current fiscal year, a school district that partners with Teach For America SC must, by September first, provide to Teach For America SC information on the academic achievement of students who were directly taught by Teach For America corps members during the prior year. The information must be in a format that protects the identity of individual students and must include state assessment data as appropriate.*

1A.63.*(SDE-EIA: Kindergarten Assessment) To ensure the effectiveness of the state's investment in public and private pre-kindergarten programs, the State Board of Education shall adopt a statewide kindergarten assessment no later than June 30, 2015 and shall establish policies for its prompt implementation, using funds appropriated for Assessment/Testing.*

1A.64.*(SDE-EIA: CERRA School Leadership Mentors) Of the funds appropriated to the Center for Educator Recruitment, Retention and Advancement (CERRA), up to $200,000 shall be used to establish and operate a program to expand and enhance the ranks of qualified mentors for principals and school leaders. In developing the program, CERRA shall emphasize research-based practices in its identification, training, and maintenance of a diverse network of principal and school leader mentors, with an emphasis placed on developing mentors with significant instructional experience improving student achievement. These mentors shall not only support and guide principals and school leaders during and after the induction process, but also strive to attract a broader range of professionals, including underrepresented and non-traditional candidates, to consider and pursue opportunities to serve in school leadership positions.*

1A.65.*(SDE-EIA: South Carolina Public Charter School District Funding) The funds appropriated in Part IA, Section XI - South Carolina Public Charter School District must be allocated in the following manner: Pupils enrolled in virtual charter schools sponsored by the South Carolina Public Charter School District shall receive $1,900 per weighted pupil and pupils enrolled in brick and mortar charter schools sponsored by the South Carolina Public Charter School District shall receive $3,600 per weighted pupil. Any unexpended funds, not to exceed ten percent of the prior year appropriation, must be carried forward from the prior fiscal year and expended for the same purpose. Any unexpended funds exceeding ten percent of the prior year appropriation must be transferred to the Charter School Facility Revolving Loan Program established in Section 59-40-175.*

1A.66.*(SDE-EIA: Public Charter Pupil Counts) With funds appropriated to the South Carolina Public Charter School District, the district must require each charter school to submit a student attendance report for the 5th, 45th, 90th and 135th days. Reporting requirements shall include both Average Daily Membership and Weighted Pupil Unit membership. The South Carolina Public Charter School District shall then provide the data for each charter school to the Department of Education. Quarterly, the department will submit the information to the House Ways and Means Committee, the House Education and Public Works Committee, the Senate Finance Committee and the Senate Education Committee.*

The South Carolina Public Charter School District must also require each virtual charter school to collect the following information: (1) the reason or reasons why each student enrolled in the virtual charter school district from both the parent(s) and the referring school district; and (2) the reason or reasons why a student withdrew from the virtual charter school district. This data must be provided to the Department of Education quarterly and must include the unique student identifier. The department, in turn, will provide summary information to the House Ways and Means Committee, the House Education and Public Works Committee, the Senate Finance Committee and the Senate Education Committee on the enrollment and withdrawal information.

1A.52. *(SDE-EIA: XII.F.2. Educational Partnerships) The funds provided to the Center for Educational Partnerships at the College of Education at the University of South Carolina will be used to create a consortium of educational initiatives and services to schools and communities. These initiatives will include, but are not limited to, professional development in writing, geography and other content areas; training; research; advocacy; and practical consultancy. The Center will establish collaborative educational enterprises with schools, school districts, parents, communities, and businesses while fulfilling the responsibilities of the School Improvement Council Assistance. The Center will focus on connecting the educational needs and goals of communities to improve efficiency and effectiveness.*

1A.53. *(SDE-EIA: XII.F.2. STEM Centers SC) All EIA-funded entities that provide professional development and science programming to teachers and students should be included in the state's science, technology, engineering and mathematics education strategic plan.*

1A.55. *(SDE-EIA: EOC Partnerships for Innovation) Of the funds appropriated or carried forward from the prior fiscal year,*

the Education Oversight Committee is directed to participate in public-private partnerships to promote innovative ways to transform the assessment of public education in South Carolina that support increased student achievement in reading and college and career readiness. The Education Oversight Committee may provide financial support to districts and to public-private partnerships for planning and support to implement, sustain and evaluate the innovation and to develop a matrix and measurements of student academic success based on evidence-based models. The committee will work to expand the engagement of stakeholders including state agencies and boards like the Educational Television Commission, businesses, and higher education institutions. The committee shall annually report to the General Assembly on the measurement results.

1A.58. *(SDE-EIA: XII.F.2-CERRA/Teaching Fellows) The additional funds provided to CERRA in the current fiscal year must only be used to support the Teaching Fellows and Teacher Cadet programs.*

91.26. *(Impact of Scholarship Eligibility Criteria) With the funds appropriated to or authorized for the Education Oversight Committee, the committee shall investigate whether academic eligibility criteria for state-supported scholarships are deterring talented high school students from enrolling in higher-level, including dual enrollment, courses. The committee shall submit a report to the Governor and the Chairmen of the House Ways and Means Committee, the House Education and Public Works Committee, the Senate Finance Committee, and the Senate Education Committee no later than December 1, 2014 with its findings and an evaluation of various policy options to mitigate any adverse findings.*

91.28. *(LEG: Technology Panel) Of the Funds appropriated in XII.E.2. for Technology there is to be created a panel to study South Carolina's current and future educational technology needs and make recommendations on the distribution of technology funds to meet the needs for software, hardware, connectivity, professional development and instructional technologies for public schools. The panel would also assess the connectivity needs of the state regarding households and business, especially in rural South Carolina. The panel will provide recommendations to the House Education and Public Works Committee, the House Ways and Means Committee, the Senate Education Committee and the Senate Finance Committee no later than January 15, 2014. The panel would include three appointees from the K-12 School Technology Initiative, the State Superintendent of Education or his designee, one appointee from the Budget and Control Board's Division of State Information Technology, one appointee from the South Carolina Telecommunications Association, three appointees from higher education institutions and/or the Commission on Higher Education, the Secretary of Commerce or his designee, one appointee from a School District serving less than 2,000 pupils, one appointee from a School District serving between 2,001 and 5,000 pupils and one appointee from a school district serving more than 5,000 pupils each made by the Superintendent of Education. Staff for the panel will be provided by legislative staff to include the Education Oversight Committee, if requested. Members shall serve without compensation.*

Technology Allocation- Draft Language

SECTION 2. (A) Funds appropriated to the Department of Education for the K-12 Technology Initiative shall be distributed among the public school districts of the state, including special schools and the South Carolina Public Charter School District, in proportion to their 135-day average daily memberships (ADM) for the most recent fiscal year for which such data are available. The Department of Education shall distribute funds to school districts as follows:

(1) For a school district with a poverty index of less than 75: $35 per ADM;

(2) For a school district with a poverty index of at least 75 but no more than 85: $50 per ADM; or

(3) For a school district with a poverty index of 85 or greater or a special school with no defined poverty index: $70 per ADM.

(B) The Department of Education may adjust the per-ADM rates for each of the three classes defined above in order to conform to actual levels of student attendance and available appropriations, provided that the per-ADM rate for each class is adjusted by the same percentage. Funds distributed to a school district through the K-12 Technology Initiative may only be used for the following purposes:

(1) To improve external connections to schools, with a goal of reaching at least 100 kilobits per second, per student in each school by 2017;

(2) To improve internal connections within schools, with a goal of reaching at least 1 megabit per second, per student in each school by 2017; or

(3) To develop or expand one-to-one computing initiatives.

A school district that has achieved each of the above goals may petition the K-12 Technology Initiative Committee for permission to apply its allocation to other technology-related uses; such permission shall not be unreasonably withheld.

(C) Funds appropriated in this section may not be used to supplant existing school district expenditures on technology. By August 1, 2015, each school district that receives funding through the K-12 Technology Initiative during Fiscal Year 2014-15 must provide the K-12 Technology Initiative Committee with an itemized report on the amounts and uses of these funds, using a form developed by the Education Oversight Committee. In this report, a school district must provide information on its efforts to obtain reimbursements through the “E-Rate” Schools and Libraries Program administered by the Universal Service Administrative Company. Within its available resources, the K-12 Technology Initiative Committee shall support

Update to the EOC on the P-20 Initiative to Improve Reading Performance

SC EDUCATION
OVERSIGHT COMMITTEE

PO Box 11867 | 227 Blatt Building | Columbia SC 29211 | WWW.SCEOC.ORG

Development of State Early Literacy Plan

The EOC has been working with Dr. Baron Holmes who is developing a plan that challenges stakeholders to improve early literacy by focusing on what abilities must be focused on with very young children and who should be charged with nurturing these skills.

On November 14, a group of early childhood leaders met to discuss how family literacy programs, family services programs, center-based programs, and community organizations could collaborate to provide services designed to promote high levels of early literacy. A follow-up meeting in early 2014 is being planned.

The EOC is also working with Bud Ferillo at the USC Children's Law Center on producing a video on the development of reading skills throughout a person's life. Through interviews with experts and practitioners, the final product will look at the importance of language and reading on the brain development of infants, the need for K-12 students to have access to materials and teachers trained in diagnosing and intervening when students have reading difficulties, as well as the role reading has on the economic development of SC. The video is scheduled to be available in February 2014 to coincide with the release of SC's progress toward the 2020 Vision.

Stakeholders involved:

Leigh Bolick, SC Dept. of Social Services

Callee Boulware, SC Reach Out and Read

Bill Brown, University of SC School of Education

Penny Danielson, SC Dept. of Education

Mary Lynne Diggs, SC Head Start

Tim Ervolina, United Way Association of SC

Baron Holmes, University of SC

Sara Beth King, Nurse Family Partnership

Mary Anne Matthews, SC First Steps

Lynne Noble, Columbia College

Karen Oliver, United Way of the Midlands

Debbie Robertson, SC First Steps

Bunnie Ward, United Way of the Midlands

Early Childhood Literacy Draft Discussion Paper

Prepared by Baron Holmes and Liyun Zhang

Introduction

The Read to Succeed legislation challenges SC stakeholders to improve early literacy dramatically by answering and then acting on the following: a) What literacy abilities must be cultivated; b) For whom; c) When; d) Addressed by which programs; e) Addressed how; therefore: f) What must be done by whom and how they must do it.

What literacy abilities must be cultivated: oral language (receptive & expressive), written language skills, interactive & independent reading, reading comprehension, motivation to read, and writing.

For whom: young children demonstrating low language and literacy ability & skills predictive of being unable in school to "substantially demonstrate reading proficiency". Research shows widening language deficits beginning as early as when children begin to talk and substantial deficits soon afterward in their literacy development.

When: as early as the children and their serious deficits can be identified accurately.

Addressed by: center-based early care & education (ECE) programs, Head Start, and schools; and parents receiving support from Family Literacy services.

How: through evidence-based literacy development programs and practices with proven effectiveness for enhancing language and literacy skills.

What must be done and how: promote receptive and expressive language skills, print awareness, and emergent literacy skills, including early writing. These skills should be promoted through substantial interactive dialogue of increasing complexity, reading to and with the child, encouraging and guiding inventive writing and emergent spelling skills, and nurturing development of both comprehension skills and ability to express understandable and increasingly complex thoughts, information, and explanations.

What must be done and how they must do it: Parents and family members should engage each child in: extensive dialogue and interactive discussion to build increasingly complex inquiry and expressive skills; exposure to print through interactive reading; and development of rudimentary writing which expresses ideas and messages of growing clarity.

What must be done and how they must do it: Center-based programs, because of their challenging child-to-adult ratios, generally must pursue language & literacy development through small and large group reading, through productive child-to-child dialogue, and during literacy-infused play. Since most adult dialogue in center-based programs with an individual child is inevitably intermittent and of short duration, the dialogue must be used purposefully to build skills of expression, analysis, and persuasion involving increasingly complex language and thoughts. Staff must be creative and organized in promoting child language and literacy though shared peer projects and collaborative activities, such as during center-time activities.

What must be done and how they must do it: Community Literacy Collaboratives can promote language and literacy through diverse opportunities for family, child, and community

interaction. Community programs can bring together families with their young children for a wide variety of activities that enhance language and literacy development. These programs can be sponsored by such organizations as churches in which families of young children are already members or through specially created programs emphasizing literacy development or simply infusing child literacy as part of a broader array of offerings. An explicitly literacy-focused program might be a book fair with story-character plays & puppet theater, all organized around specific books which parents and family read with their children before and after the book fair.

The early literacy challenge: Although families have most of the contact time with children up to age 5, the dearth of conclusive evaluation evidence on family literacy programs as typically implemented thus far provides little assurance that these programs will enable families to improve their children's language and literacy substantially. However, much research has been done on early literacy development through small, well-planned interventions and observational studies. These studies found promising early literacy growth results that could and should be replicated by family literacy, center-based, and community language and literacy development programs.

Which major programs serve and can thus provide access to how many children (or families) of what ages (before 5 will be what most programs would be able to identify): [to be determined for the following]

- Family literacy = PAT, NFP, PCHP, Healthy Families, Healthy Steps, Early Start
- Family services: pediatricians and other primary care, WIC, TANF, SNAP, Parts C&B
- Center-based programs: child care, Head Start, Early Head Start, and 4K preschool
- Community: libraries, churches (child care and Sunday school), and United Ways

Which of the programs serving young children address literacy and how? [Summarize briefly in this discussion document the currently delivered literacy promotion efforts. Then ask each of the organizational contacts to summarize succinctly how much is done for how many of which children; their longer summaries can be presented as appendices to the report.]

Literacy deficits: Literacy deficits have typically been publicized for 3rd grade reading proficiency when standardized testing begins with the high stakes consequences of retention in grade, referral to special education, and stigma for teachers and schools with large numbers of students failing to achieve proficiency. The most widely used reading data comparable across states comes from the National Assessment of Educational Progress, which is administered first in the 4th grade. This carefully constructed assessment is administered in every state. The 2013 NAEP in South Carolina found that only 28% of 4th graders tested proficient in reading, but 40% scored below basic and the remaining 32% scored at the basic level. For the US overall, 34% were proficient in reading and 33% were below basic. Subgroup disparities have been alarmingly large in SC. The 2013 NAEP rates of 4th graders scoring below basic were: 51% vs. 21% for poor vs. not poor children, 53% vs. 28% for black vs. white students, and 43% vs. 35% for males vs. females. The rates scoring proficient in 4th grade were: 17% vs. 46% poor vs. not poor, 13% vs. 39 black vs. white, and 35% vs. 31% female vs. male. These substantial deficits and achievement gaps did not develop primarily in grads 3&4 but rather through limited

language and literacy experiences at home and in center-based programs starting from infancy. The limited data available in SC is presented below.

On the last SC Readiness Assessment, teachers rated as "not consistently ready" one-quarter of kindergarten and 1st grade students in reading and writing and one-third in their communication skills. The Stanford Reading First test in the fall of 1st grade determined that in high-poverty schools 54% needed substantial intervention, while only 20% of students had reading skills at grade level.

SCRA 2008	**Reading** **(% not consistently ready)**	**Writing** **(% not consistently ready)**	**Communication** **(% not consistently ready)**
Kindergarten	24%	20%	32%
1st grade	25%	28%	33%

Stanford Reading First 2004-2008	**At Grade Level**	**Needs Substantial Intervention %**
1st grade	20%	54%
2nd grade	36%	31%
3rd grade	26%	47%

Children who are slow in becoming capable readers:

- **Reached school far behind in language and literacy skills, primarily because of family literacy deficits**. High-risk children constituting one-quarter of all 4-year-olds were found by the DIAL screening assessment to have low language skills as compared with national norms: 19% below 95% of all students nationally; 30% below 90% nationally; and 50% below 75% nationally.
- The Stanford Reading First test found that 41% of students entering 1st grade in high poverty schools have Speaking Vocabulary which needs substantial intervention, while only 37% have Speaking Vocabulary at grade level of national norms.

DIAL Language at entry to 4K preschool **(% SC students scoring at national percentiles)**	**Percent**	**Ratio**
At or below 5th percentile	19%	4:1

At or below 10th percentile	30%	3:1
At or below 25th percentile	50%	2:1

Stanford Reading First Speaking Vocabulary in Fall of 1st grade (at risk schools 2004-2008):	
At grade level	37%
Needs additional intervention	22%
Needs substantial intervention	41%

- **Exhibited serious phonological or other reading difficulties:** The Stanford Reading First test found that one-third of children entering 1st grade in high poverty schools need substantial intervention for phonemic awareness and phonics.

Stanford Reading First Phonemic Awareness (at risk schools in Fall of 2004-2008):	**1st grade**	**2nd grade**	**3rd grade**
At grade level	56%	65%	78%
Needs additional intervention	11%	21%	15%
Needs substantial intervention	33%	14%	6%

Stanford Reading First Phonics (at risk schools in Fall of 2004-2008):	**1st grade**	**2nd grade**	**3rd grade**
At grade level	28%	9%	8%
Needs additional intervention	42%	35%	26%
Needs substantial intervention	30%	56%	66%

A matrix profile of students with serious reading problems in 3rd grade was created by linking disadvantaged children from a 1995/96 birth cohort to their outcomes on the Stanford Reading First (SRF) test for grade 3. These children were predominately low income (75% free & reduced lunch) and non-white (77%), mainly from lower SES school districts which participated in the Reading First program. The chart below shows the SRF rates of very low performance (below the national 20th percentile classified as Needs Substantial Intervention = NSI) for a variety of risk groups listed in the first column. Most of these risk groups have been identified as disproportionately having the worst educational and risk-taking (teen pregnancy, juvenile justice) outcomes as compared with the full SC population of public school students. Grade 3 is the point at which the frequently repeated "truism" is said to require a major shift from "learning to read" to "reading to learn". Thus the Reading Comprehension column is an important reflection of which risk groups with a predominately low income, minority population are most in need of substantial reading intervention services, not only in the 3rd grade and beyond but more importantly previously during early childhood and grades K-3. Overall 31% of the students in the Reading First schools needed substantial intervention for their reading comprehension, as compared with 22% for those with none of the 3 highest risk factors. The children with these risk factors had the highest rates of needing substantial intervention for reading comprehension deficits: a) 41% for low literacy family (mother with less than a high school degree); b) 43% for disabled children; c) 43% for having an emotional-behavioral problems identified by the kindergarten teacher. Of students with 2 of these 3 risk factors, 49% needed substantial intervention. For demographic groups, 39% of minority males, 28% of minority females, 23% of white males, and 21% of white females needed substantial intervention. The NSI rates for other reading competencies are shown in the table below. Overall the highest rate was for Phonics (51%), followed by vocabulary development (36%), Reading Comprehension (31%), Oral Reading (30%), and Reading Fluency (29%). The lowest NSI rates were for 21% for Speaking Vocabulary and for Phonemic Awareness. As an approach for targeting and screening young children with the high risk of serious reading problems, the risk factor characteristics from this cohort analysis would provide a starting point. The young children to be targeted could include those: 1) born into low literacy families such as a mother who did not complete high school; 2) having speech and language disability; 3) having emotional-behavioral and executive functioning deficits; and with other somewhat less predictive risk factors such as low income, male, English as a second language, and lack of family support and stability (including abuse, neglect, & foster care). These factors should be used only to identify children for screening. Decisions about selection for language and literacy intervention should be based on the screening and then on further diagnostic assessment to determine verifiable language and literacy needs to be addressed through appropriate services.

Thus the rows of the matrix table specify <u>For whom</u> and the columns present <u>What</u> reading deficiencies must be addressed. Not presented in the table are <u>How</u> and <u>By which programs</u> the reading deficits should be addressed. However, the various sections of this paper will review research and data that explain <u>Which programs</u> address <u>What</u> reading competencies and <u>How</u> they must be addressed at home and through center-based services.

[Present any additional language and literacy data available before 4K (use ECLS-B&K); then any school district data from MAP, etc., PASS 3rd grade ELA, NAEP reading 8th, TEC reading scores, etc.]

Early identification: It has been 13 years since the passage of the First Steps to School Readiness legislation, 24 years since Family Literacy programs were created through the 1989 Target 2000 legislation, and 29 years since preschools for 4-yearolds were initiated by the EIA of 1984. Despite the passage of several important legislative acts and despite of the passage of decades of implementation, there is still little data assessing needs, determining progress, and evaluating effectiveness of our early childhood efforts. This is certainly the case for early literacy. It is now time to: 1) decide what assessments should be administered to whom, 2) collect representative sample data to reflect the statewide picture for priorities such as early language & literacy, and 3) identify the children with serious language & literacy deficits requiring services, training, and supports. To remedy the rarity of formally recorded and reported early identification and the consequential limited data, what additional data should be gathered by whom for which children? All potential reporting sources could be asked to receive training for performing initial language & literacy screenings. The trained screeners would report into a literacy skills bank the deficits data and contact information for each child with low language and literacy skills. The data would be used to assure attention in all programs' admission decisions and to alert programs to a child's potential need for receiving such language and literacy support as may be available. The data could also be used to guide child-find recruitment by Head Start, 4K preschool, disability programs, community services, family literacy, book distributions, etc. Additional trained assessors could be designated in each larger community or region to perform more reliable literacy assessment on children identified through the screening as potentially at-risk. The assessors could also train program personnel how to perform their own language and literacy assessments more reliably.

Literacy competency components: The eight competencies listed below were identified through detailed examination of three dozen journal articles on early literacy development, but do not constitute a definitive list.

1. Oral language: a) expressive (vocabulary, spoken sentence structure, communication content and coherence); b) receptive (vocabulary, listening comprehension, phonemic awareness)
2. Written language skills: (alphabet knowledge, print concepts/awareness, invented spelling, early decoding, word recognition, concepts about book reading, decontextualized language, literacy register, sentence structure, grammar, syntax)
3. Writing: individual words, phrases, sentences, spelling, text content and coherence
4. Comprehension
5. Motivation to read
6. Child participation during reading:
   a) Reading to an adult,
   b) Listening to the adult reading,
   c) Responding to adult reading,
   d) Answering questions,

e) Labeling,
f) Narrating the story
g) Interpreting,
h) Predicting,
i) Drawing on own experience

7. Effects on adult language and literacy behaviors resulting from child speech, reading ability, & comprehension strengths
8. Independent reading

The eight literacy competencies listed above should be compared with the competencies identified by the National Early Literacy Panel report based upon an exhaustive set of meta-analyses.

Two recent documents provided consensus or narrative summaries of a portion of the research literature concerning the relationship between early precursor skills and later conventional literacy skills. Snow, Burns, and Griffin (1998), in their report of the National Research Council's panel on preventing reading difficulties in young children, identified weaknesses in oral language, phonological awareness (PA), and alphabet knowledge (AK) as prime targets of intervention to prevent the occurrence of significant reading problems. Similarly, Whitehurst and Lonigan (1998) identified skills in the domains of oral language, print and letter knowledge, and phonological processing as encompassing two aspects (outside-in and inside-out skills) of emergent literacy that are related to later conventional forms of reading and writing. Whereas these two documents provided the beginnings of a structure to understand those skills that may serve as the developmental precursors to reading and writing abilities, neither document was based on a comprehensive summary of the published literature.

Summary of Primary Analyses: *When measured in kindergarten or earlier, several variables are moderate to strong predictors of later outcomes in conventional literacy. A summary of the results of the three meta-analyses and a summary of findings from multivariate studies are shown in Table 2.4 for literacy-related variables with at least a moderate zero-order [correlational] relationship with at least one conventional literacy outcome. Strength of relationship is based on the following ratings (0–0.29 = small; 0.30–0.49 = moderate; ≥ 0.50 = strong). Ten variables meet this criterion. Of these 10 variables, six variables [alphabet knowledge (AK), phonological awareness (PA), rapid naming of letters and digits, rapid naming of objects and colors, "writing or writing name," phonological short-term*

Table 2.4. Summary of Meta-Analytic and Multivariate Results for Literacy-Related Predictor Variables with Moderate to Strong Relationships with Conventional Literacy Outcomes

Predictor Variable	Decoding	Reading Comprehension	Spelling	Multivariate Significance
AK	++	+	++	Yes
PA	+	+	+	Yes
Concepts about print	+	++	+	Sometimes
RAN letters and digits	+	+	NA	Yes
RAN objects and colors	+	+	+	Yes
Writing or writing name	+	+	+	Yes
Oral language	+	+	+	Sometimes
Phonological STM	—	+	+	Yes
Visual perception	—	—	+	No
Print awareness	—	+	NA	NA

Note: ++ = strong relationship based on zero-order correlations; + = moderate relationship based on zero-order correlations; — = weak relationship based on zero-order correlations; NA = no relevant data available for analysis.

memory (STM)] were consistently related to later conventional literacy outcomes, and these six variables continued to be predictive when other variables were controlled in multivariate analyses. Most of these findings are the result of a relatively large number of studies that included a large number of children. Consequently, these relationships between these variables and later conventional literacy outcomes not only are sizable, but they are likely to be highly reliable and stable.

Overall Summary: *These results provide compelling evidence as to what some of the important early developing precursor skills are to reading, writing, and spelling development. Across three different outcome domains—decoding, reading comprehension, and spelling—a consistent collection of predictor variables emerged that possess moderate to strong relationships to these important outcomes. In many cases, these variables provided significant prediction of later literacy outcomes even when other variables were controlled. Based on these findings, there is strong evidence for the importance of AK, PA, rapid naming tasks, "writing or writing name," and phonological STM as predictors of later reading and writing skills. Less consistent evidence exists for the importance of oral language and concepts about print as predictors of later reading and writing skills, mainly because these variables do not always continue to predict literacy outcomes once other variables, such as AK or PA, are controlled.*

The important predictor variables continued to have moderate to strong relationships with later measures of literacy regardless of the age at which the predictor variable was assessed (e.g., preschool versus kindergarten) or the age at which the outcome variable was assessed (e.g., kindergarten versus first or second grade). Although there were some minor differences involving age of assessment of the predictor variable, age did not influence the strongest predictor variables. Greater differences were observed depending on when the outcome assessments were administered; generally, there were higher correlations with kindergarten outcomes than with first- or second-grade outcomes. However, this is most likely due to the closer time proximity of these assessments than to age differences, per se.

Implications for Research and Practice: *The results suggest a need for more careful study of the role of oral language in literacy development. Some aspects of oral language were clearly more strongly related to later literacy outcomes than were other aspects of oral language. Notably, measures of simple vocabulary knowledge were fairly weak predictors of later decoding and reading comprehension, and these measures tended to not remain significant when other variables were included in multivariate analyses. In contrast, more complex aspects of oral language, such as grammar, definitional vocabulary, and listening comprehension, had more substantial predictive relations with later conventional literacy skills. These results suggest that an instructional focus on vocabulary during the preschool and kindergarten years is likely a necessary but insufficient approach to promoting later literacy success.*

The value of these variables for predicting later literacy success is without question, and future research could help to provide systematic investigation into which combinations of predictors would work best in various contexts. There is less certainty that teaching these variables early on will result in later achievement improvement. This is because these studies provide correlational data, and such data are not sufficient for determining a causal connection between these factors and later learning.

Results from the analysis of findings related to PA appear to have instructional implications for early childhood educators. These findings suggest the importance of attending to children's progress along a developmental continuum of PA, rather than an emphasis on particular PA skills. These analyses did not reveal important differences in phonological memory, synthesis, or segmentation. However, they do suggest an order to the development of all of these skills across a progression of smaller and smaller units of sound. Rather than trying to teach any particular

skill (such as phonological STM), it may be of greater value to ensure that progress is occurring and that children are becoming progressively more able to deal with smaller and smaller units of sound (e.g. words, syllables, onset rimes, phonemes).

How literacy components should be promoted: Common to family, center-based, and community literacy development programs are 7 proven-effective or promising approaches:

1) training program workers and parents/family to carry out the following six literacy development approaches effectively;
2) strengthening oral language through high quality talk/dialogue to build vocabulary, sentence complexity, communication of coherent thoughts, interactive give & take discussion skills, comprehension of ideas, and habits of curiosity and courtesy in exploring ideas;
3) helping the child learn to read and understand environmental print;
4) making widely available many attractive books and other written materials appropriate for the children, and promoting reading them extensively throughout each day;
5) taking advantage of opportune times and activities for dialogue or reading to occur, including not only independent reading but also adult-child literacy interactions during meals, travel, dressing, and play;
6) assuring that reading experiences are high quality, including a) reading to or with the child, b) listening to the child reading and then responding; c) frequent reading; d) repeated readings of the same book; e) teaching & engagement techniques (questions, labeling, responses and feedback to the child, positive reinforcement, paraphrasing, variation of the "demand level" according to child language and ability level);
7) tutoring the child in developing reading skills of types and levels appropriate for the child (including letter knowledge, phonemic awareness, word recognition, print concepts, comprehension, and writing).

The NELP meta-analyses investigated the effectiveness of the primary program approaches, instructional strategies, and practices thought to be effective in enhancing "*conventional literacy and its predecessor skills in early childhood".* Effectiveness was based on calculation of Effect Sizes [ES] for each intervention which are categorized as: small = 0.30 – 0.49, moderate = 0.50 – 0.79, and large = 0.80 or greater. The significance of an effect size is also calculated by taking into account the number of studies available from the intervention.

Instructional Practices That Enhance Early Literacy Skills: *The panel also set out to identify studies that employed experimental or quasi-experimental methods to determine the effectiveness of instructional strategies, programs, or practices in imparting conventional literacy skills or any of these precursor skills to young children. The panel did not set out to find evaluations of previously identified programs or interventions but searched for all such studies that had been published in refereed journals in the English language. The panelists then grouped*

the identified studies into five analytical categories. The categories of intervention and the number of studies within each category included the following:

- *Code-focused interventions (n = 78): Interventions designed to teach children skills related to cracking the alphabetic code. Most code-focused interventions included PA instruction.*

- *Shared-reading interventions (n = 19): Interventions involving reading books to children. These interventions included studies of simple shared reading and those that encouraged various forms of reader-child interactions around the material being read.*

- *Parent and home programs (n = 32): Interventions using parents as agents of intervention. These interventions may have involved teaching parents instructional techniques to use with their children at home to stimulate children's linguistic or cognitive development.*

- *Preschool and kindergarten programs (n = 33): Studies evaluating any aspect of a preschool or kindergarten program. Ten studies in this category concerned one particular intervention (the Abecedarian Project). Other studies evaluated effects of educational programs, curricula, or policies, such as extended-year experience, on kindergartners.*

- *Language-enhancement interventions (n = 28): Studies examining the effectiveness of an instructional effort aimed at improving young children's language development.*

The code-focused instructional efforts reported statistically significant and moderate to large effects across a broad spectrum of early literacy outcomes. Code-focused interventions consistently demonstrated positive effects directly on children's conventional literacy skills. Book-sharing interventions produced statistically significant and moderate-sized effects on children's print knowledge and oral language skills, and the home and parent programs yielded statistically significant and moderate to large effects on children's oral language skills and general cognitive abilities. Studies of preschool and kindergarten programs produced significant and moderate to large effects on spelling and reading readiness. Finally, language-enhancement interventions were successful at increasing children's oral language skills to a large and statistically significant degree. Together, these findings suggest that there are many things that parents and preschools can do to improve the literacy development of their young children and that different approaches influence the development of a different pattern of essential skills.

There is great interest in the idea of providing age-appropriate interventions. However, there were few important differences among these categories of study with regard to age; one important exception was in the area of language interventions, which showed greater effectiveness early on. Otherwise, when age-level comparisons were possible, the large and significant effects of the various interventions were obtained with groups of both younger and older children. This means that most of the types of instruction that are effective in kindergarten are very similar to those that can be used in preschool. Unfortunately, there have not been direct tests of age differentiation in early literacy instruction across kindergarten and preschool, and

there are still too few studies of preschool literacy instruction to provide comparison results that can be embraced with a high degree of certainty.

Few interventions improved conventional literacy skills or the precursor skills most related to later literacy growth, the exception being code-focused interventions. One reason so few interventions were found to foster improvement in these measures is that few intervention studies with young children included measures of such outcomes. Generally, code-focused intervention studies included such measures, while studies of other instructional approaches did not. It is possible that some of these other approaches may also be effective in improving early literacy skills, but that can only be determined through studies employing such measures. Code-focused programs, book sharing, programs for parents to use at home, and language-enhancement instruction all improved children's oral language skills. The panel wanted to determine whether any child characteristics influenced the effectiveness of the instructional interventions. In most cases, the panel could not determine the role of children's characteristics because of reporting limitations in the original studies. In general, however, variables, such as age, SES, and race, did not seem to alter the effectiveness of the various interventions, and it will take future research to determine whether certain interventions would be effective with particular groups of children.

It should be noted that the interventions that produced large and positive effects on children's code-related skills and conventional literacy skills were usually conducted as one-on-one or small-group instructional activities. These activities tended to be teacher-directed and focused on helping children learn skills by engaging in the use of those skills. Almost all of the code-focused interventions included some form of PA intervention. These PA activities generally required children to detect or manipulate (e.g., delete or blend) small units of sounds in words. Few of the interventions used rhyming activities as the primary teaching approach. Teaching children about the alphabet (e.g., letter names or letter sounds) or simple phonics tasks (e.g., blending letter sounds to make words) seemed to enhance the effects of PA training.

Of the five NELP chapters on interventions, the oral language chapter is more readily understood by persons lacking knowledge of advanced statistics and of the reading terminology such as phonological awareness, decoding, and phonological STM. Oral language is defined in NELP as: *the ability to produce, comprehend, or both aspects of spoken language, including semantics, syntax, or both; often measured by a standardized test, such as the Peabody Picture Vocabulary Test or the Clinical Evaluation of Language Fundamentals*.

Thus language development addressing primarily oral language is an easier topic for reading research novices to start on deciphering the NELP analyses. Also it provides a smooth transition into the issues regarding Family Literacy programs which are addressed immediately after the Language Development chapter findings.

Language Development (NELP Chapter 7)

Description of the Language-Enhancement Studies: The studies of language-enhancement interventions used various outcome measures to evaluate the effectiveness of these approaches. All of these studies included some measure of oral language development—most often a vocabulary

measure—while others evaluated the effects of language-enhancement efforts on phonemic awareness; cognitive ability; decoding; memory; print knowledge; rapid automatic naming (RAN); general readiness; and reading. No studies evaluated alphabet knowledge (AK), spelling, visual motor skills, or writing. Although these studies considered many different learning outcomes, there were usually too few studies to allow for analysis of the overall impact of language interventions on these variables (there had to be three studies that measured a particular construct to allow the results to be meta-analyzed). Table 7.1 includes the average effect sizes (ESs) presented in alphabetical order, numbers of studies, and significance of the interventions on the various outcomes.

Table 7.1. Estimates of Effect Sizes Across Outcome Domains for Language-Enhancement Interventions

Dependent Variable	Fixed ES	Random ES	95% CI		*N* of Studies	*p* for ES
			Lower Bound	Upper Bound		
Cognitive ability	0.85	0.85	0.27	1.42	1	0.004
Oral language	0.61	0.63	0.42	0.84	19	0.0001
PA	0.55	0.57	0.01	1.14	2	0.05
Print knowledge	0.81	0.81	0.20	1.41	1	0.009
RAN	0.54	0.54	–0.05	1.13	1	0.075
Readiness	0.62	0.62	0.08	1.16	1	0.024
Reading	0.20	0.36	–0.38	1.10	2	0.343

Note: CI = CI based on random-effect model.

To be included in the analyses reported in this chapter, studies had to consider the

Table 7.3. Distribution of Outcome Measures Used in 19 Language-Enhancement Studies

Outcome Assessments	Percentage of Studies
Language output (e.g., mean length of utterance, frequency of word use)	15
Gains in specific words or grammatical structures	10
Composite language scores	26
Complexity of multiword utterances	26
Listening comprehension	16
Literacy outcomes	15

effectiveness of some instructional effort implemented to improve young children's language ability and skills. The 19 studies varied considerably in outcomes measured, intervention durations, and ages of the children. About 70 percent of the studies included preschoolers or kindergarten children, with the rest considering the language growth of infants and toddlers (only one study included infants below one year of age). About half of the studies involved a relatively short intervention (less than 10 weeks), and, of those with longer interventions, the length was still usually no more than a few months, with a couple lasting for an entire school year. About 40 percent of the studies focused on children with language and learning delays. Most of the studies used random assignment of children to conditions (68 percent), with outcomes measured soon after the end of the intervention (79 percent). Only four of the 19 studies evaluated sustained effects at some later point after the completion of the intervention. The person administering the intervention ranged from a researcher or clinician (53 percent of the studies) to teachers (26 percent) or parents (16 percent), and, in one study, a computer administered the intervention. To measure the interventions' effectiveness on children's learning, a broad range of outcomes was included in these 19 studies. These are summarized in Table 7.3.There was a great deal of variability across the 19 studies in the type of intervention implemented. In general, interventions differed on such factors as amount of direction or structure provided, the social context of the intervention, feedback to the child, and the type of language skill targeted for change. A typical intervention evaluated here might be referred to as focused-stimulation interventions (26 percent). These were usually conducted within a naturalistic context in which the child heard specified language input (e.g., vocabulary, question types) often in game-like or play activities within their daily routines. Another frequent approach had children engaged in language activities, such as responding to wh questions or talking about similarities and differences in pictures (21 percent). Two other categories of language interventions were similar in the direct training of components of language, such as phonology (16 percent) or sentence structure (16 percent). Some studies did not easily fit into any of these categories. For example, only single studies examined the following approaches: the use of computer feedback to train vocabulary; building language through motor exercises; and building listening comprehension through exposure to stories read aloud.

Do Language-Enhancement Interventions Improve Children's Language and Literacy Learning? *The studies that looked at oral language development outcomes were grouped into three overlapping clusters for analysis. The first cluster,*

general oral language enhancement, included any measures of oral language, and this cluster included all 19 studies. A second cluster of eight studies, language composite, was drawn from these 19 studies and looked at composite or general measures of oral language development. Finally, a third group of 10 studies, oral language (vocabulary enhancement), focused specifically on vocabulary improvement alone.

General Oral Language Enhancement as a Function of Language Intervention: *These 19 studies attempted to improve young children's performance on a wide variety of oral language outcomes, including expressive or receptive vocabulary skills and grammatical development. The interventions were delivered in differing ways but usually in a small-group format. Parents, teachers, graduate trainees, speech-language clinicians, or trained home visitors delivered the interventions. These interventions were varied and included efforts to teach specific words, phonology, or morpho-syntax, incidental teaching, enriched play experiences, and encouragement of creative thinking. Children with and without language problems were included, as were gifted kindergarten children and children in low- and middle-income families.*

The evaluation of language-enhancement interventions across these 19 studies showed that such interventions successfully improved children's oral language development. The average ES for these 19 studies is 0.63 (using a random-effect model), which is considered to be a moderate-sized effect.

Oral Language (Language Composite) Enhancement as a Function of Language Intervention: *Eight studies contributed to the analysis of a mixed set of language outcomes (hence the term language composite). Among these, children with language delays or atypical communication skills were included in four of the studies, and toddlers or preschoolers were included as subjects in six of the studies. The interventions varied considerably, from focused or direct training methods to training contextualized in adult-child interactive play or storybook-reading sessions to a motor-skill or physical-education context to which enriched language was added. For example, an interactive, child-centered stimulation program delivered by speech-language pathologists and focusing on vocabulary expansion and two- and three-word combinations was the enhancement delivered in one study of late-talking 21- to 30-month-olds. In a second study of children with language delays or deviant communication skills, adult-child dyads with carefully scripted adult roles moved from imitation of child play toward more mature cooperative interactions, thus promoting an interpersonal context for communication instead of one directed more pointedly at speech production and comprehension. The comparison group received a more traditional, language-focused intervention. A third study provided language-enhanced physical-education activities for the treatment group, while the comparison group engaged in physical-education activities without language enhancement, with children in special education, typical pre-kindergarten and Head Start pre-kindergarten classes, in 24 sessions in an eight-week time frame. Yet another study varied instructional-unit size for kindergartners in the training of listening comprehension, using story reading in each intervention session, and comparing 1:1, 1:7, and 1:15 teacher-to-child ratios. Although diverse in their intervention methods, agents, target areas of language enhancement, and rationales, the studies share the characteristic of casting a rather broad net of assessments as outcomes of interest. Virtually all of the studies were conducted in a center-based or school-based context, with the exception of one reporting that the enhancement sessions took place uniformly in*

one locale for each child, either at the child's preschool or at home. The evaluation of language enhancement versus control across these eight studies yielded a significant result for the dependent measure, oral language (language composite). It is therefore worthwhile to report the measures represented in the composite group. These included measures of expressive vocabulary, oral language, verbal IQ, listening comprehension, language skills (not otherwise specified), phonemic awareness, concept of word, memory, oral-expression composite, RAN graphological and RAN non-graphological, reading comprehension, and visual motor skill.

Oral Language (vocabulary enhancement) as a Function of Language Intervention: *The 10 studies included in this cluster were an array of language enhancements, usually delivered in small-group format in several sessions over several weeks, and almost all guided by teachers, graduate trainees, or speech-language clinicians. Two of the studies used parents as interventionists, and one employed computer-based training of vocabulary. The focus of language enhancement ranged from specific target-word learning to incidental teaching to encouragement of enriched play experiences or enhancement of creative thinking to training via phonological intervention or morpho-syntax intervention. The oral language and vocabulary outcomes included expressive or receptive vocabulary skills and additional oral language abilities. Children with and without language problems were sampled in the mix of 10 studies, as were gifted kindergartners. The evaluation of language enhancement versus control across the 10 studies yielded a non-significant result for the dependent measure, oral language–vocabulary. Again, this finding is limited by the strict inclusion criteria applied to all studies examined in the NELP report and by the intervention versus no-treatment comparison methodology required for this analysis. See Table 7.4 for a comparison of outcomes by type of language measure used (simple vocabulary measures versus composite measures of language).*

Table 7.4. Effect Sizes of Oral Language Interventions on Measures of Simple Vocabulary and Composite Measures of Oral Language

Measures	Mean ES	SE	95% CI		*t*	*N*[a]	*p*
			Lower Bound	Upper Bound			
Vocabulary	0.54	0.13	0.28	0.79	4.14	10	< 0.0002
Composite	0.80	0.22	0.37	1.22	3.68	8	< 0.0002

[a] *One of the 19 studies included in this analysis contributed both measure and is reflected in the total n.*

Even though it is impossible to provide further analysis of those outcome measures that were used in fewer than three studies, it is important to note that various non-oral language outcomes were examined in several studies and often with good results. For example, two studies considered the impact of oral language interventions on children's phonological awareness (PA) and found significant improvement. Similarly, there were significant and sizable gains evident in individual studies that considered cognitive ability, print knowledge, and reading readiness. With more language-intervention studies that include these types of outcome measures in the future, it will be possible to determine whether other aspects of literacy-related learning are enhanced.

Are Interventions That Target Children Younger Than Three Years Old More Effective Than Those with Older Children? Four intervention studies tested the

effectiveness of a language intervention for children younger than three years old; three included toddlers (25.6 to 31 months), and one targeted infants (9–15 months). These four interventions varied somewhat, but all were toy centered, three were child directed with an emphasis on giving language stimulation in response to the child's interest, and the one with infants involved provision of different approaches to encourage vocal sound and word approximations. The four interventions ranged in duration from one to three months and so were relatively brief in nature. These four studies were contrasted with the other 15 interventions that had targeted children older than three years of age (range 3.5 to five years). These 15 interventions also varied greatly on many dimensions (e.g., duration, intervention approach, person providing the intervention). Significant differences were found between the two groups of studies with greater effectiveness found for the interventions that included children younger than three years of age. These results suggest that intervening earlier versus later is advantageous for enhancing children's language development.

Does the Effectiveness of Language Interventions Depend on the Agent (e.g., teacher, parent, computer) Who Delivers It? *There were inadequate numbers of studies to make comparisons with regard to intervention agents. It was not possible, for instance, to determine whether teachers were as effective as speech-language pathologists. Some studies involved both parent and professionals as agents of intervention. However, there were adequate numbers of studies to compare teachers to parents. Three of the studies used teachers as interventionists, while four used parents. All three of the teacher-interventionist studies took place in kindergartens, without particular note of language delay or impairment in the samples studied; two of these included explicit teacher training in the program package or method of question generation that was the target of intervention. In the third, pre-service teachers conducted the intervention sessions by reading prepared stories and instructions for the questions asked about the stories. In contrast to the studies using teachers as agents of intervention, those that employed parents as interventionists included children both at and younger than kindergarten age, with half of the four studies including samples of children with language difficulties or delays. The comparison between intervention agents—teacher versus parent—yielded no significant difference in outcomes. It did not seem to matter who delivered the interventions, as children benefited in either case. Again, the small study set in this contrast limits its utility, as does the marked differences in the types of interventions being implemented by teacher versus parent as agent.*

Are Interventions That Are Structured Such That Feedback Is Given to the Child After He or She Responds More Effective Than Those That Do Not Provide Feedback? *This question was possible to address because four of the intervention studies were similar in terms of providing some form of feedback to a child based on the type of response the child gave. These four studies were contrasted with eight intervention studies that did not give any form of systematic feedback following a child's response. No significant differences were found in intervention effectiveness as a function of the provision of feedback following a child response.*

Are Interventions That Require a Child to Respond More Effective Than Those That Do Not Have This Requirement? *Seven intervention studies were designed to require a child*

receiving the intervention to provide a response. In all seven studies, the child was required to respond in a range of ways, such as (1) answer a question (e.g., "What is this called?" while the interventionist points to or shows a picture or object), (2) repeat a modeled utterance, (3) describe characteristics of objects or ask questions about them, or (4) provide the name of a toy after hearing its name. Thus, for all seven of these interventions, the interventionist provided a certain degree of structure that might be expected to facilitate greater language learning. Five were carried out with five-year-olds, and two interventions targeted two- and three-year-olds. Six intervention studies that did not require a child to give a response were contrasted with the seven studies that did. All six of these were also included as part of the eight studies in the previous section that did not provide feedback to a child's response. When these two groups of studies were examined for differences in effectiveness, no significant differences were found ($Q[1,11] = 0.35$, $p = 0.56$).

Summary and Conclusions: *Interventions designed to improve young children's oral language skills have been effective. These interventions enhance oral language when it is defined as a diverse set of outcomes, such as expressive and receptive language skills, phonemic awareness, and verbal intelligence. It might be expected that oral language–enhancement interventions would work better with children who struggle with language or have some form of language impairment, but these analyses suggest this not to be the case, though differences might emerge from a larger sample of studies. The one difference that did seem to matter in the effectiveness of language-enhancement interventions concerned the children's ages. Older children, between three and five years of age, did not get as big a language boost from these interventions as did the younger children. It would appear that intervening earlier rather than later is advantageous, although the exact process of this impact is not addressed here. Similarly, there seemed to be no key features to these interventions that consistently gave an advantage. All of these programs seemed to work. In fact, of the 19 studies, 18 had individual outcome effects that were moderate to large. There is a set of questions of both pressing practical significance and enormous theoretical importance that could not be addressed in these analyses. These are challenging questions that, if answered, would inform the field about teaching materials or strategies that provide maximum benefit for children's language growth in the birth-to–five-year-old age range.*

Among those questions are the following:

- *Is there benefit to the adoption of specific approaches to teaching in language interventions (e.g., direct instruction versus naturalistic or milieu-based interventions)?*
- *Can we comment on the effectiveness of specific curricula developed for the birth-to– five-year-old population (e.g., computer software–based curricula, commercially available curricula with instruction delivered through teachers and curricular materials, researcher-mounted curricula delivered through teachers, parents, or researchers)?*
- *Is there information on best practices for delivering language interventions for specific populations of children (e.g., children with language impairments, children who are English-language (or whatever the language of school instruction is) learners, children in low-income families)?*
- *Does success vary as a function of the agent of intervention (e.g., researchers, speech-language pathologists, other professionals)?*
- *Does outcome differ with the intensity of the intervention (e.g., frequency of applications per week, group size, group versus individual training)?*
- *How shall we conceptualize the interaction of intervention strategy, frequency of application, and age group?*

Considerations for Future Research:. *The following areas of research are suggested as a starting point for generating a better understanding of what interventions work and for which children, as well as the aspects of early language and literacy development that they enhance:*

- *examinations of language curricula and programs addressing the ages at which they are most effective.*
- *more replication studies of the interventions that show positive effects.*
- *attention to large cohort studies that examine programs that might show efficacy in enhancing specific aspects of language development. These include expressive and receptive language for vocabulary, syntax, semantics, and pragmatic skills.*
- *attention to the need for a more unifying terminology of characteristics of children at risk for language problems and those identified as language impaired.*
- *more longitudinal research that provides information on the sustainability of the effectiveness of intervention programs.*

The importance of addressing these questions is clear, and the information we lack precludes making careful and precise statements to guide practice. While an unsatisfying conclusion, this is nonetheless a highly pertinent one; gaps in systematically collected data (that is, the studies meeting criteria for the evaluation of language interventions) leave us with only a sketchy response to extremely important curricular and intervention questions.

Efforts of Family Literacy programs: Promotion of language and literacy by family literacy programs currently is neither extensive nor intensive. [present NFP & PAT language & literacy practices] These programs annually serve approximately 2% of all children under age 5. If only children and their parents from low income and language families (approximately one-third) are considered the target group, then perhaps 6% of those targeted are served each year; thus, roughly 10-15% of the target group is being served for at least a year or two before kindergarten. This means that more than five of every six families anticipated to need training and coaching on literacy promotion will not receive the needed assistance from family literacy programs. It should be noted that children spend approximately 80% of their waking hours before kindergarten in the care of their family or relatives. Families are able to provide one-on-one language and literacy interaction with their children, though their available time must be spread across the number of children in the family. Since parents have four times the hours available and typically only one-fourth to one-half as many children to work with as compared with center-based teachers, it seems logical to engage and train as many families as possible to cultivate the language and literacy of their own children. In providing the needed parent training and support, family literacy programs should partner with center-based programs, especially Head Start and preschool programs which have greater literacy programming capacity than the majority of child care programs. However, most contact of Head Start and preschools is with four-year-olds, starting after language and literacy development have been determined for three or four full years by the cultural habits of families.

The literacy promotion habits of families with young children in SC have neither been recorded nor reported, despite more than two decades of family literacy programs since being initiated

through the Target 2000 legislation enacted in 1989. For most of the two decades, parenting/family literacy programs were primarily Parents as Teachers plus a few Parent Child Home programs, and in recent years the Nurse Family Partnership. These programs have gathered very little data on the quantity and quality of family literacy practices such as the number of times parents read to and with their children each week, what they read, how engaged the children are, or what skills the children have developed. PAT programming decisions are typically decentralized, with the content and methods being decided by each family in consultation with the home visitor. Little data on child literacy growth has been generated, thus literacy results accountability is not possible. Programs managed by the SCDE and First Steps have gathered participation data in the past, but only the 2009 High/Scope evaluation has provided any evaluation data on literacy skills growth. Data from the Adult-Child Interactive Reading Inventory (ACIRI) reported to First Steps by its county-sponsored programs show improvement in the literacy practices of both parents and their children increasing during participation in interactive reading promoted by family literacy programs. Evaluation data from national studies of the family literacy programs has been limited in amount, methodological rigor, and findings on program impact, though with a few gratifying exceptions. The findings for language and literacy growth have been even scarcer, since the parenting, family literacy, and family support programs usually address a wide variety of outcomes other than literacy, as determined jointly by the family served and the program worker (often a home visitor). PAT has sponsored a number of evaluations using correlation analysis that found modest positive results. However, a control-experimental evaluation by SRI International for PAT in Northern California found no impact on vocabulary development (near-zero effect sizes of 0.02 and 0.06 for the PPVT at age 3). NFP has carried out randomized trials to evaluate subsequent academic outcomes for the children it served, though its service is from late in pregnancy only to age 2. Its modest effect size of 0.3 or less for early language development and later academic skills including reading was achieved without the opportunity to impact the potential for early reading and language development occurring after the 2nd birthday. Overall, the national family literacy evaluation findings are at best quite limited, and most of the results for literacy are in the small to moderate range.

Language development is one of the primary foundations for literacy which can be readily understood by most persons, as contrasted with phonics, phonemic awareness, memory retrieval, and other skills which are typically unfamiliar concepts. Language skills such as vocabulary, listening skills, and expressive ability are related to important literacy competencies, especially reading comprehension and writing which become the primary focus of literacy after decoding has been mastered, usually by grade 3. The NELP analysis had access to very few longitudinal studies past 1st and 2nd grades, thus provides little perspective for the impact of language abilities on reading comprehension and writing proficiency in grades 3 and above (i.e., “reading to learn” and “writing to inform”). Excerpts from the NELP report indicate

that as much or more remains to be learned about language and literacy as what can be verified now from "evidence-based" and "proven-effective" programs and practices.

Reading Skills Development: Numerous published studies of the literacy practices of family members and center-based workers have focused on interaction methods between adult and child while sharing books and other literacy materials, as well as adult-child dialogue. Some of the studies are simply observational (no comparison group), with the adult and child reading or talking, usually together, but sometimes for the child reading and writing alone. Many other studies are experimental with a child and an adult or just a child reading & writing in one or more ways that are compared with similar children and adults not involved in applying the specified literacy approaches. These studies have addressed the following practices:

1. Reading: a) adult reading to or with child, b) listening to child reading and then responding; c) reading frequently; d) repeated readings of a book; e) teaching & engagement techniques (questions, labeling, responses & feedback to the child, positive reinforcement, paraphrasing, variation of demand level according to child language level and overall ability).
2. Parent tutoring/teaching the child to acquire reading skills such as letter knowledge, phonemic awareness, word recognition, etc.
3. Learning from environmental print
4. Dialogue/talk
5. Location/activity of talk or reading: with family during a) eating; b) dressing; c) bath; d) toy & other play, e) car travel; and in center-based programs through a) whole group; b) small group; c) individualized; d) in activity centers; and e) meals;
6. Availability of books
7. Parent beliefs about reading & literacy development of their children
8. Dialogic reading

Most of the evidence from these studies is correlational, while a much smaller number of evaluations used comparison groups, some few of which were randomized at the program, classroom, or child level. The findings are both extensive and revealing, thus provide useful guidance for what should be done to enhance language and literacy growth. These findings will be presented first as summarized through meta-analyses and reviews of the research.

Summaries of the research findings are helpful, but their limitations must also be considered because of numerous substantive and methodological concerns. At the simplest level, the summaries all find that parent support for literacy has been effective for various competencies. In a meta-analysis of 33 studies, Bus & colleagues found that *"parent-preschooler reading is related to outcome measures such as language growth, emergent literacy, and reading achievement. The overall effect size of d = .59 indicates that book reading explains about 8% of*

the variance in the outcome measures. The results support the hypothesis that book reading, in particular, affects acquisition of the written language register. The effect of parent-preschooler reading is not dependent on the socioeconomic status of the families or on several methodological differences between the studies. However, the effect seems to become smaller as soon as children become conventional readers and are able to read on their own." The effect size overall was 0.59: (0.67 for language skills, 0.58 for emergent literacy, and 0.55 for reading achievement, all indicating a moderate level of impact). However, the studies reviewed in the meta-analysis varied substantially for the types of interventions. Even though the sole intervention variable used in the Bus meta-analysis was frequency of joint book reading, this in effect lumped together all types of joint book reading practices and all ages ranging from 26 to 96 months at the time of the outcome analysis. Also, only 9 of the 33 studies were experimental, with the other studies correlational, longitudinal, or retrospective. The largest effect size was for language skills, showing that joint book reading was substantially successful in developing the "written literacy register" of books for grammar, syntax, and a variety of sentence forms. For early emergent literacy versus later reading skills, the impact of book reading frequency was similar, thus indicating that "*preschoolers who are already ahead in literacy proficiency maintain their position relative to other children".* The benefit from joint reading was smaller for older children, probably "*because the school environment or independent reading by the child may compensate for the lack of family reading experiences. However, book reading seems to make the start at school easier. This is particularly important for children from low socioeconomic status families. The* [declining] *age effect* [of joint book reading] *is reduced for children from lower class families. This is because these children are less stimulated to read independently."* Therefore joint book reading at home appears to remain important for their literacy development. This speculation, however, was based on only two studies.

A second meta-analysis was performed by Senechal & colleagues using only experimental studies to investigate family literacy interventions in grades K-3. Their meta-analysis investigated three types of family literacy activities. *"The first category consists of studies in which parents were asked to read to their children. Another category includes interventions in which the parents were asked to listen to children read books. The final category includes those interventions in which parents were trained to do literacy exercises with their children."* The meta-analysis produced effect sizes of 0.65 overall, 1.15 for tutoring a child to read, 0.52 for listening to a child read, and only 0.18 for reading to a child. The insignificant result for parents reading to their children appears to provide some confirmation for Bus' finding that joint parental reading with children declines with age; however, the Senechal meta-analysis for grades K-3 found that listening to the child read is significant, whereas reading to the child is not. One important qualification is that Senechal omitted oral language as an outcome. So it

appears likely that such oral language benefits as vocabulary development continue to result from reading to a child as well as from listening to a child read during the early school years.

Neither the Bus nor the Senechal meta-analyses generate results identified and evaluated at a detail level, for example the benefits from listening to a child read gained by "*providing corrective feedback, encouraging the child to use context clues to aid in comprehension or praising and reading alone with the child to promote self-confidence and motivation."* Such specific practices analysis must be extracted from individual research reports and then summarized overall, a very laborious and confusing undertaking. However, there is extensive evidence that reading to and with young children has been shown effective in building oral language, comprehension, literacy register, print awareness, and other written language skills. But just because it was shown in published research studies that these skills can be improved does not explain how these skills can best be cultivated through the use of specific effective practices. Understanding these effective practices and helping families and center-based workers to adapt and carry them out with fidelity is the enormous challenge facing early childhood literacy development efforts, both local and statewide, as envisaged by the Read to Succeed legislation. Moreover, parents must be coached and supported by well-trained workers who themselves understand and can communicate the specifics of the effective practices. Achieving significant improvement in the language and literacy skills of young children, especially those from families with low income and limited education, requires support and guidance for the families to adopt and carry out effective literacy practices. Moreover such guidance and coaching depends on well-trained home visitors and other family literacy workers. Similar training and guidance is likewise necessary for center-based workers to cultivate the language and literacy skills and nurture the interests of young children at-risk of low language, literacy, and reading proficiency.

Research findings such as those reviewed by Bus, Senechal, and Scarborough were subjected to rigorous statistical investigation through the NELP meta-analyses. The NELP report found benefits from parent and home literacy activities, especially for oral language development. However, the NELP meta-analyses revealed huge gaps in rigorous research for most facets of literacy development through parent and home literacy efforts.

Home and Parent Programs (NELP Chapter 5)

Overall Estimates of Intervention Impacts: *As can be seen in Table 5.1, home and parent programs had statistically significant effects on measures of oral language (small) and cognitive ability (moderate to large). There were two other statistically significant effects of home and parent programs (i.e., memory, writing); however, each of these effects was based on a single study, which represents too few studies to allow unambiguous interpretation. Examination of the confidence intervals (CIs) for the oral language and cognitive ability ES estimates shows that they were overlapping. Hence, the effects of home and parent programs were statistically equivalent on these*

two outcomes. Overall, the results reported in Table 5.1 indicate that home and parent intervention programs included in these studies had a statistically significant and positive impact both on young children's oral language skills and general cognitive abilities.

Table 5.1. Estimates of Effect Sizes Across Outcomes for Home and Parent Literacy Programs for Each Dependent Variable

Dependent Variable	Fixed ES	Random ES	95% CI		*N* of Studies	*p* for ES
			Lower Bound	Upper Bound		
AK	–0.03	–0.03	–0.31	0.24	1	0.81
Cognitive ability	0.65	0.92	0.22	1.62	6	0.01
Memory	1.17	1.17	0.50	1.84	1	0.0006
Oral language	0.28	0.37	0.18	0.55	18	0.0001
PA	0.22	0.21	–0.12	0.54	2	0.21
Reading	0.28	0.28	–0.12	0.68	1	0.17
Reading readiness	–0.05	0.05	–0.33	0.22	1	0.71
Spelling	0.09	0.09	–0.18	0.37	1	0.51
Writing	0.52	0.52	0.23	0.81	1	0.0005

Note: CI = CI for random-effect model.

Analysis of Intervention Effects by Type of Intervention: *The 18 studies that included oral language as an outcome were diverse in the focus, content, and duration of intervention studied. Two studies examined the effect of training parents to use dialogic reading (DR) (see Chapter Four). Six studies used a home visiting program to either teach parents general stimulation activities for their children or teach parents more focal oral language stimulation activities. Five additional studies taught parents similar general stimulation or language interaction strategies in a university or clinic setting. One of these studies was the Abecedarian project, in which parents received training and support for more than four years. Two studies taught parents to act as speech-language clinicians for their children with speech-language disorders. Two studies investigated the impacts of having parents engage in activities coordinated with activities occurring in their children's kindergarten or preschool. Finally, one study examined the impact of an intervention program that included both parent training and weekly parent-child sessions at the children's preschool.*

Given the variability in the types of interventions (e.g., from general stimulation programs for infants to parents acting as speech-language therapists for their children with speech-language disorders) as well as the relatively low number of studies in this group, it was difficult to identify meaningful subgroups of studies to examine possible moderators of ES estimates. More than half of the studies yielded moderate to large positive ESs. Interventions in the six studies that yielded near zero to negative ESs seemed not to share any obviously meaningful characteristic. One of the studies was the Abecedarian project which included one of the more focused and intensive parent interventions. One of the studies examined the effects of a general home-visiting program by paraprofessionals and nurses. One study examined the effects of teaching parents to encourage and support children's

narratives. Two studies concerned the impact of parents acting as intervention agents for their children with speech-language disorders, and one study examined the impact of adding a parent-based intervention component to a center-based program.

Summary and Conclusions: *Results from this meta-analysis of the impacts of home and parent programs on the literacy skills of young children indicate that these interventions yield a moderate to large effect on oral language outcomes and general cognitive abilities. These effects appear to be robust to variations in children's ages and demographic characteristics of families. Additionally, the effects of these programs on children's oral language skills were consistent across measures of simple vocabulary and measures of more complex oral language skills. Although home and parent programs could impact other aspects of literacy, only a handful of studies included these other outcomes, and no other outcome was included in more than two of these studies (for example, alphabet knowledge [AK] was included in only one study, and phonological awareness [PA] in only two). Therefore, it was not possible to determine whether there were other effects of home and parent programs.*

The commonality across all of the programs examined by this group of studies is that they somehow involved parents as the agents of intervention for children. Nevertheless, these programs varied greatly in potentially important ways. For example, some of the programs had more general goals (such as trying to improve children's health, behavior, or cognitive functioning); others aimed at more specific literacy goals (such as improving language skills). Because of the great amount of variation evident in these approaches, it is not yet possible to point to one or two examples of replicated models of successfully involving parents in enhancing their children's developmental outcomes. Additional research on identification of key aspects of home and parent programs is needed.

It was not possible to examine the question of the additive effects of home and parent programs in the context of high-quality center-based education programs. A few of the studies contrasted the effects of PI combined with an early childhood program with early childhood programs alone. In some cases, there was an additive effect of the parent program, and, in some cases, there was not. Many of the interventions included in this group of studies involved frequent home visits or one-on-one parent-training sessions. With the growing availability of universally available, federal- or state-funded early childhood education programs, understanding the impact of home and parent programs in the context of high-quality early childhood education deserves attention.

Ultimately, attention to the nature, quality, and scope of home and parent intervention programs is required to identify those likely to be successful and those less likely to be successful. In the majority of studies examined in this meta-analysis, the interventions were delivered to parents by the developers of the intervention or by those who were supervised closely by the developers. Whether such interventions could be taken to scale—implemented broadly by individuals with limited or no contact with the developers—is yet unknown.

Finally, it is important to recognize that none of the more commonly used programs of enhancing PI in young children's literacy development (e.g., Chicago Child-Parent Centers, Parents as Teachers) was evaluated in the set of studies reviewed. Consequently, the results of this meta-

analysis do not confirm effectiveness of these specific programs. Notably, only one study included in the analysis involved the typical model in which parent education, parenting education, and parent-child time was evaluated. Whereas this study yielded a moderate ES (0.74), the degree of PI was relatively intensive. In addition to participating in parent education and parenting classes, each mother worked as a teaching assistant in her child's classroom. In this context, the program was effective. Knowing whether all of these components and this level of intensity are required to achieve a positive outcome are questions that need to be addressed by future studies.

Shared Reading Interventions (NELP Chapter 4):

Shared reading in a one-on-one relationship is primarily a family activity rather than a routine center-based learning support, since the pupil-teacher ratios in preschool make individual and even small group reading difficult to schedule routinely. This was learned by Whitehurst and colleagues in their dialogic reading research at child care centers. Their small group (1:5 ratios or less for 3 year-olds) dialogic reading program was discontinued in all centers as soon as the research on dialogic reading was completed. The discontinuation occurred because the child care teachers felt that the daily small group sessions were impractical to schedule. One-on-one shared reading in child care programs seems unlikely, perhaps impossible without the expensive services of a reading interventionist instructor or volunteer. The possibilities in Head Start and public school preschool must be determined.

Shared-reading practices—a parent reading a picture book with a toddler or a teacher reading a book to a class of preschoolers—are reading practices that are widely recommended to promote language and other skills related to early literacy development. Shared-reading activities are often recommended as the single most important thing adults can do to promote the emergent literacy skills of young children. Scarborough and Dobrich (see also Bus, van Ijzendoorn, & Pellegrini, 1995) provided a summary of studies that examined the effect of shared reading on young children's emergent literacy skills, and their results called into question the positive effects often claimed for reading or sharing picture books with young children.

Accordingly, the National Early Literacy Panel (NELP) examined the effects of interventions that primarily or entirely focused on shared reading. These shared-reading interventions included those that involved parents, teachers, or the combination of parents and teachers implementing some form of shared reading with children individually or in groups. The studies included in NELP's analysis of shared-reading interventions differ from those included in the earlier Scarborough and Dobrich and Bus et al. reports in a number of ways. NELP's analysis considered only those studies that had undergone some independent scientific review, included studies of both preschool and kindergarten children, and included only studies that evaluated the effects of interventions. NELP subjected the studies to a more rigorous set of screening criteria to increase the likelihood that the effects were causally interpretable, and finally, NELP included studies that had not yet been published at the time of the earlier review.

Children, in most of these studies, were exposed to some kind of a short-term (i.e., one to six months) shared-reading intervention that either represented a substantial increase in frequency of shared-

reading activities or a change in the style of shared-reading activities (such as engaging the children actively in telling the story rather than being passive listeners). There were many variations on these procedures, with some delivered by teachers and others by parents. Some studies examined whole-class interventions; one study examined the impact of providing books and information to parents during well-baby pediatrician visits; and two other studies examined the impact of computerized storybook interventions. Children in the comparison groups in these studies usually received less exposure to shared reading than did the children in the experimental group, and the shared reading they did receive rarely involved more than the adult just reading books to children. In most cases, the researcher did not specify or control what the children experienced in the comparison-group condition, meaning that these children's exposures to shared reading were to the usual practices of their teachers or parents. Consequently, these studies provide comparisons of some kind of intensified or improved effort to read to children with the usual kinds of shared reading that children commonly experience.

Overall Estimates of Intervention Impacts: *Most of the shared-reading intervention studies measured the impact of the interventions on oral language skills (16 studies). Fewer studies examined the impact of these interventions on phonological awareness (PA) (two studies), general cognitive ability (one study), alphabet knowledge (AK) (two studies), print knowledge (four studies), reading readiness (one study), or writing (one study).*

These studies indicate that shared-reading interventions can have a significant, substantial, and positive impact both on young children's oral language skills and on young children's print knowledge. Shared-reading interventions appear to have no impact on young children's PA skills or their AK; however, there have been too few studies using these—or other—outcome measures to provide a reliable estimated ES.

Table 4.1. Estimates of Effect Sizes Across Outcome Domains for Interventions Involving Shared Reading or Sharing Books with Young Children for Each Dependent Variable

Dependent Variable	Fixed ES	Random ES	95% CI		*N of Studies*	*p* for ES
			Lower Bound	Upper Bound		
AK	–0.06	–0.06	–0.47	0.35	2	0.78
Cognitive ability	0.10	0.10	–0.21	0.41	1	0.52
Oral language	0.66	0.73	0.27	1.20	16	0.002
PA	0.11	0.11	–0.15	0.35	2	0.42
Print knowledge	0.51	0.50	0.28	0.73	4	0.0001
Readiness	–0.14	–0.14	–0.64	0.36	1	0.58
Writing	0.52	0.52	0.23	0.81	1	0.0005

Note: CI = CI for random-effect model.

The largest impact of shared reading was on oral language outcomes, with an average ES of 0.73. This result means that, on average, children who received a shared-reading intervention scored, on

oral language, more than 0.7 of a standard deviation higher than children who had not received such instruction. To put this in context, if the average children who were not read to in the enhanced format scored 100 on a standardized test of oral language (with a mean of 100 and a standard deviation of 15), then the average children who were read to in these enhanced or extended ways would score 111 on the test (i.e., the difference between scoring at the 77th percentile versus scoring at the 50th percentile).

Children's early childhood education teachers, children's parents, and combinations of teachers and parents have conducted shared-reading interventions. Table 4.9 lists the ES estimates from interventions in which teachers, parents, or both teachers and parents provided the shared-reading intervention (or the computerized intervention was used). There was no statistically reliable difference in ESs depending on how the shared reading was delivered. Comparison of the studies involving parents reading to their children and studies involving both parents and teachers doing the reading did not have statistically reliable differences in ESs (the CIs overlap). When the ROR study (involving parent reading) was excluded from the analysis, the estimated ES for parent-provided reading was reduced to 0.57 (p = 0.16). [The ROR study was excluded because the researchers did not directly assess language development but asked parents to estimate their children's vocabulary performance.]

Table 4.9. Effect Sizes for Oral Language Outcomes for Study Classification Based on Agent of Intervention

Agent of Intervention	Mean ES	SE	95% CI		*t*	*n*	*p*
			Lower Bound	Upper Bound			
Parent	1.35	0.40	0.56	2.14	3.36	3	0.006
Teacher	0.84	0.32	0.21	2.60	2.60	5	0.023
Parent and teacher	0.29	0.30	–0.29	0.88	0.99	6	0.34
Computer	0.36	0.50	0.61	1.34	0.73	2	0.48

Summary and Conclusions: *Results from this meta-analysis of the impacts of shared-reading interventions on the early literacy skills of young children indicated that these interventions yielded moderate effects on oral language skills and print knowledge. For oral language skills, these effects were robust across variations in the type of shared-reading intervention and the children's ages or their risk status. Although it is possible that shared reading could affect other aspects of children's literacy and language development, only four studies even included print knowledge as an outcome variable, and even fewer studies included any other variable. Therefore, it was not possible to determine whether there were other benefits of shared reading.*

Given the ubiquity of both the practice of and the recommendation for shared reading in early childhood education settings, it is somewhat surprising that more studies have not investigated the impact of these practices. Although it is clear that shared reading improves oral language skills and print knowledge, there is not yet evidence that shared reading promotes the development of other emergent literacy skills, and there is no evidence that shared reading promotes any improvement in conventional literacy skills. Although it is often claimed that reading to children improves their reading ability, too few studies have been conducted with emergent literacy outcome measures (such as PA, AK, readiness, and writing) or conventional literacy outcome measures (such as decoding,

reading comprehension, or spelling) to provide statistically reliable evidence that shared reading improves such skills (and, if so, which ones). Given these important gaps in what is known about the effectiveness of shared reading, it seems prudent to conclude that shared reading alone would not be a sufficient response to the literacy learning needs of young children. This would be particularly true for those at risk or who show weaknesses in those specific emergent literacy skills that have not been shown to improve due to reading to children (such as PA or AK).

Despite any analytical limitations, these studies indicate that shared-reading interventions provide early childhood educators and parents with a useful method for successfully stimulating the development of young children's oral language skills. For some reason, the impact of shared-reading interventions is larger for vocabulary outcomes than for more complex aspects of oral language (such as grammar, narrative understanding, or listening comprehension) or broader measures of oral language that include aspects of both vocabulary and more complex oral language skills. Whether this is due to real differences in outcomes or to the nature of the shared-reading interventions that have been studied and the outcome measures used so far is as yet unknown. Additional research will be needed to better explain this finding.

Future research needs to examine the types of shared-reading interventions that have been studied and how these interventions have been delivered. Interventions that used an interactive style of shared reading, such as dialogic reading (DR), produced larger effects on children's oral language outcomes than did non-interactive interventions, but these differences did not reach statistical significance. However, only studies using DR resulted in an average ES that was statistically significant. Direct studies of the contrast between interactive shared reading and non-interactive shared reading could help to clarify the meaning of this difference. For the existing studies, there were no significant differences in outcomes due to who delivered the shared-reading interventions, whether books were provided as part of the intervention, or how much the adults read to the children. It is important to note that statistical significance is not the only issue of importance in the context of a meta-analysis. Statistical significance—that is, the determination that an effect is sizable enough that it would unlikely have occurred by chance or normal variation—is affected by both the size of a difference and the number of observations (in the case of meta-analysis, the number of studies). The sizes of the differences found here for DR, agent delivering the intervention, amount of reading, and book availability were large enough to be of educational importance but were simply not found across a sufficiently large sample of studies to achieve statistical significance.

For studies conducted in preschool or kindergarten classes, the teacher or other adult most often read to children in small groups. Notably, the estimated ESs for shared reading do not reflect the impact of the typical program of shared reading conducted in early childhood settings (e.g., whole-group shared reading during circle time), which was typically the comparison condition in studies of shared reading in schools. Consequently, the results of this analysis do not provide evidence that typical early childhood education classroom practices promote the development of oral language and print knowledge skills.

Overall, the evidence supports the positive impact of shared-reading interventions that are more intensive in frequency and interactive in style on the oral language and print knowledge skills of young children.

Efforts of center-based programs: Despite wonderful opportunities in center-based programs to cultivate the language and literacy development of young children, little data and too few reports have been generated to describe, evaluate, and celebrate their impact on the literacy of children served, though many other perspectives on these center-based programs have been studied and reported thoroughly. Now is the time for literacy practices and results to be given the same critical scrutiny. There are approximately 300,000 children under the age of 5 in SC. As stated above, roughly four-fifths of their waking hours before kindergarten are spent with their family members. During the remaining 20% of waking hours, the children are in the care of non-family services, primarily in center-based programs or with family childcare providers. A survey of parents sponsored by the ABC program a decade ago determined the shares of waking hours for each of the caretakers other than family. Of the hours in out-of-family care, children in low income families below 185% of poverty spent their overall waking hours before age 5 as follows in: child care centers (11.4%), family child care (4.4%), Head Start (1%), and 4K preschool (2%). Of the non-family hours, over half were center-based childcare, and roughly 30% of the hours were with family childcare providers, leaving less than 20% split between Head Start and 4K preschool. Even taking into account possible bias in reported hours, it is obvious that the providers most difficult to work with have the preponderance of the waking hours.

Since parents and relatives have roughly 80% of all the hours and childcare providers have over 80% of the non-family hours, children are spending the least amount of their time in the care of the two provider systems that are easiest to work with in organizing higher quality literacy promotion. Both Head Start and public schools have education requirements for their teaching workforces and both have support and supervision systems with some capacity to train, guide, and assist their teachers, at least at a minimally adequate level. Whether these two systems actually provide the support and training will be reviewed later, but they do have the potential. Since family childcare providers are very small, they would be the most difficult to work with, as would many small childcare centers. Therefore, simple logistics would suggest that only half of the non-family hours of children (10% or less of all hours) offer plausible prospects for providing effective partners in literacy promotion. All the other children must be reached through several thousand family childcare and small center-based childcare providers; or through more than 100,000 families and their relatives. This clearly implies that the early literacy promotion campaign must be strategic, targeted, and networked through all potential support systems. As stated previously, targeting is necessary to focus efforts to assist those young children least likely to become proficient readers and writers. Children from families with low income and limited education can be targeted for screening. Center-based providers such as Head Start, 4K preschool, and those childcare providers with a large numbers of children receiving ABC vouchers or SNAP/food stamps should be engaged as active partners in performing the

screening necessary to identify children with the lowest oral language and print awareness. The children identified with the lowest language and literacy should be served through such center-based and family literacy programming as can made available. Ideally the center-based programs would engage families in their own literacy development efforts at home for the higher risk children, with training, guidance, and support from teachers and others. Such an approach would simply follow the standard Family Literacy model but with continuing support to facilitate the application of proven-effective practices both at home and at the centers in a coordinated manner.

Serving the highest-risk children (through childcare, Head Start, & 4K preschool) [to be determined are the following]:

- How many providers have how many children of which ages?
- What literacy services do they provide?
- What specific literacy programs or approaches are being used to serve the most children and families?
- What support do they receive to strengthen their literacy services and from whom?
- What workforce literacy training is being provided to whom, by whom, and for what facets of language and literacy?
- How can we gauge the receptiveness of providers to work seriously on language and literacy development?
- What data on language & literacy services and results are available?
- What national studies are most informative regarding the content & results of literacy programming for each type of provider (Head Start, 4K, etc.)?
- Who has the best expertise on early literacy in SC? Elsewhere?

The findings from NELP's review of all rigorous evaluations of the effect of preschool and kindergarten programs on early literacy skills is perplexing at the least and very discouraging if the findings are what they suggest. First, there were only 33 studies that met the NELP criteria and just 24 when the 10 Abecedarian studies are counted as a single program evaluation. One would expect more studies, given the widespread enthusiasm for center-based early childhood interventions. This expectation especially applies to those programs following the Perry Preschool and Chicago CPC model of serving 4-yearolds that is widely seen as the most effective path to school readiness and which one would assume includes reading readiness. One would also expect stronger proof of effectiveness. The NELP analyses found that preschool and kindergarten had a significant and substantial impact only on readiness and spelling. Readiness was measured as a composite assessment of alphabet knowledge (AK), concepts of print, vocabulary, memory, and phonemic awareness (PA). Moreover, these positive readiness results

appear to occur primarily in kindergarten rather than during the preschool years. The preschool Effective Size for oral language was a negative 0.03 as compared with a small 0.28 in kindergarten. For reading, the preschool ES was a small 0.33 as compared with a large 0.88 in kindergarten. Most advocates promoting preschool have assumed that the 17:1 benefit to cost ratio of Perry Preschool includes dramatic improvement in school readiness, especially for the critical competency of early literacy. The fact that the Abecedarian program had no impact on oral language, despite the training and support provided to its parents for more than four years, is especially troublesome.

So did these preschool programs neglect literacy development altogether? Or if the programs did address early language & literacy, were their approaches poorly designed? Or was the problem a lack of training or ineffective training for the preschool teachers? The NELP review does not answer those troubling puzzles. However, these findings and resulting questions appear to impose a heavy obligation on center-based preschool providers, whether serving 4-year-olds or much younger children such as those who were served by the Abecedarian program for 4 years, starting before their 1st birthday. The obligation must involve: designing their literacy programming based on best practices, training the staff thoroughly, and monitoring results continuously to refine approaches until substantial positive results are demonstrated. Considering 1) the lack of evaluation proof of effectiveness in developing early literacy skills, 2) the small share of waking hours spent by young children in center-based services away from family, and 3) the even smaller share of waking hours spent in center-based programs with the size and support needed for effective programming design and training, all these combine into a strong challenge for these programs to implement early literacy programming based on proven-effective language & literacy practices.

Preschool and Kindergarten Programs (NELP Chapter 6):

A variety of early childhood programs have been studied since the early 1960s to determine their effectiveness in improving social and academic outcomes for young children. For example, Perry Preschool Project and the federally funded program Head Start, along with a variety of state preschool programs, have been the focus of research, as have other program such as the Abecedarian project, the Chicago Child-Parent Center, and a plethora of early prevention efforts.

The National Early Literacy Panel (NELP) examined the effectiveness of several of such preschool and kindergarten programs and interventions aimed at the development of early literacy and conventional literacy skills. (Unfortunately, the studies of some of the widely known programs have either not been reported in refereed journals or have not focused on literacy-learning outcomes, so they could not be examined here). The panel set out to determine whether such programs confer children with an advantage in literacy learning or in the development of early skills that predict later literacy success. The studies included in this chapter met the selection criteria established by the panel for the meta-analysis including (1) group design using either a randomized control trial

(RCT) or a quasi-experimental design (QED) with initial group equivalency, (2) an intervention that measured effectiveness on early literacy or conventional literacy skills, and (3) sufficient data to calculate an effect size (ES). A total of 33 studies met these criteria. Ten of these studies evaluated the effectiveness of the Abecedarian project, and, since nine of these studies involved the same sample of children longitudinally, the results of these nine studies were combined and treated as a single group.

Overall Estimates of Intervention Impacts: *Table 6.1 provides a summary of the overall effects of the various preschool and kindergarten interventions across all the different outcomes. The majority of the studies in this category provided effects for oral language (12 studies) and reading (nine studies). Fewer studies examined the impact of these interventions on alphabet knowledge (AK) (four studies), cognitive ability (four studies), readiness (three studies), spelling (three studies), phonological awareness (PA) (two studies), memory (two studies), print knowledge (two studies) and writing (two studies). Although cognitive ability per se did not arise in the predictor study, this variable is closely aligned with the various measures of IQ that were found to have predictive value in that earlier analysis. For that reason, the cognitive ability outcome is examined here.*

As indicated in Table 6.1, preschool- and kindergarten-based interventions resulted in large, statistically significant outcomes for readiness measures (1.23) and small to moderate effects on spelling measures (0.34). Although statistically significant effects also were found for memory (0.47) and print knowledge (1.00), these outcomes were measured in too few studies to allow for a reliable determination of the impact of preschool and kindergarten experiences on these skills. It should be noted that readiness tests do not represent a single skill; they are composite measures encompassing many early literacy predictors, including AK, concepts of print, vocabulary, memory, and PA.

Although the average ESs for preschool and kindergarten programs were large enough to be of educational importance for several literacy variables (such as reading, writing, and AK), these differences did not reach statistical significance for the small numbers of studies combined in these analyses. Perhaps as more studies are completed with these kinds of outcomes, it would be possible to conclude that kindergarten and preschool interventions have a general ability to improve student literacy performance. However, the oral language outcomes were both statistically insignificant and so small as to be of questionable importance, though preschool and kindergarten efforts with a more explicit focus on oral language development may have very different results.

Table 6.1. Estimates of Effect Sizes Across Domains for Interventions Involving Preschool and Kindergarten Programs for Each Dependent Variable

Dependent Variable	Fixed ES	Random ES	95% CI		*N of Studies*	*p* for ES
			Lower Bound	Upper Bound		
AK	0.31	0.23	–0.18	0.64	4	0.27
Cognitive ability	0.30	0.35	–0.11	0.80	4	0.13
Memory	0.47	0.47	0.15	0.79	2	0.004
Oral language	0.10	0.13	–0.06	0.31	12	0.17
PA	0.08	0.08	–0.15	0.31	2	0.49
Print knowledge	1.00	0.98	0.25	1.70	2	0.008
Readiness	1.23	1.22	0.05	2.38	3	0.04
Reading	2.05	0.75	–0.38	1.89	9	0.19
Spelling	0.34	0.34	0.07	0.60	3	0.01
Writing	0.72	0.67	–0.14	1.48	2	0.11

Note: CI= CI based on random-effect model.

Summary and Conclusions: *Preschool and kindergarten programs do affect young children's development of conventional literacy skills as well as important emergent literacy skills. Results of the meta-analyses examining the overall effects of preschool and kindergarten programs across outcome measures revealed two main findings. The largest impact of the preschool and kindergarten programs was on the composite measure of readiness, indicating that they were highly effective in preparing children for school entry. The other main effect was a small to moderate impact of programs on spelling outcomes. Although the ES for spelling was smaller than that for readiness, it is significant that only kindergarten programs improved spelling. This might have resulted from the possibility that kindergarten programs were more likely to focus on spelling; such skills are rarely expected of preschoolers. Early spelling work is often proposed as a valuable component of beginning reading instruction because it involves the integration of phonemic awareness skills with AK. The studies that contributed to this finding also included literacy-focused curricula, including teacher PD, further reinforcing the importance of these variables for effective implementation.*

A number of the other outcome variables had sufficient numbers of studies to allow for a meta-analysis of the results. For example, oral language had 12 studies, reading had 9 studies, and AK and cognitive ability had 4 studies each. Yet, none of these outcome variables reached statistical significance. As has been explained earlier, in a meta-analysis magnitude of difference is as important as statistical significance. In this case, the oral language outcomes seem particularly modest, meaning that the range of preschool and kindergarten programs examined here would not be expected to exert much impact on this outcome. But contrast this with the large ES for reading outcomes; although, again, this difference did not reach statistical significance, the size of the difference is so large as to be of educational importance. These findings suggest that kindergarten and preschool programs can have an impact on children's reading development.

The RCT reflected greater impacts for reading outcomes, although these findings may also reflect differences in whether teacher PD was included in the study. These findings suggest a need in future research for the characteristics of preschool and kindergarten programs to be explicitly compared.

The most commonly measured outcome in all of the NELP intervention categories was oral language. Nine of the 33 preschool and kindergarten program studies included a composite measure of oral language skills, a measure of vocabulary, or both. The estimated ESs for programs on oral language and for vocabulary tended to be small, and these effects were not statistically reliable.

The impacts of three types of preschool or kindergarten program characteristics were examined: literacy-focused curricula, PD for teachers, and parent involvement (PI). The presence of literacy-focused curricula and the availability of PD for teachers both strongly affected the reading outcomes for children in kindergarten programs. However, with the studies' inclusion of both literacy-focused curricula and PD for teachers, it is impossible to separate the effects of the curriculum from the provision of teacher PD. Additionally, the studies contributing to this finding all focused on kindergarten children only; there is a clear need for research that examines such efforts with preschool children.

Studies involving preschool and kindergarten programs with PI did not yield significant findings or sizable effects. Such findings had not been expected because of the reported effectiveness of high-profile preschool and kindergarten programs with strong PI (e.g., Abecedarian project, Chicago Child-Parent Center Study, Head Start, and the Perry Preschool Project). It appears that, although PI in preschool or kindergarten programs has been strongly encouraged in the field, the specific impacts of such PI on early literacy outcomes have not been widely studied, and there is not yet a clear, empirically proven best way to use this involvement toward improved literacy performance for young children. There is great interest in the impact of instructional programs on the learning of different racial, ethnic, linguistic, and economic groups of children. The data on preschool and kindergarten programs simply were not adequate to permit this kind of analysis. Future research will need to explore this issue more directly.

Code-focused Interventions (NELP Chapter 3)

The code-focused section has the most studies (83) to analyze and the most outcome variables (5) addressed by ten or more studies: PA 51, reading 36, AK 24, spelling 15, and oral language 14. The five outcomes all had significant effect sizes: PA 0.82, spelling 0.61, reading 0.44, AK 0.38, and oral language 0.32. Forty seven of the studies were for children in kindergarten but only thirteen for preschoolers. Most of the studies for preschoolers were for PA only. Since many persons who work on early childhood issues have little or no acquaintance with phonological awareness (PA), readers should note that the NELP report defines PA as the *ability to detect, manipulate, or analyze components of spoken words independent of meaning. Examples include detection of common onsets between words (alliteration detection) or common rime units (rhyme detection); combining syllables, onset rimes, or phonemes to form words; deleting sounds from words; counting syllables or phonemes in words; or reversing phonemes in words. PA is often assessed with a measure developed by the investigator, but sometimes assessed with a standardized test, such as the Comprehensive Test of Phonological Processing.*

The preschool interventions reviewed by NELP investigated larger speech units such as syllables and onset-rime awareness more frequently than the small phoneme units. Given the strong correlations of PA with decoding (.40), reading comprehension (.44), and spelling (.40) and also the large effect size (0.87) for PA in preschool, EC advocates and program managers need to become more knowledgeable about PA and the code-focused components of early literacy.

The National Early Literacy Panel (NELP) identified 83 studies that examined the effectiveness of various interventions that attempted to teach children code-related skills. Interventions in this category focused on teaching aspects of the alphabetic principle (i.e., the knowledge that letters in written words represent the sounds in spoken words). This was the largest collection of intervention studies that the panel reviewed, and it included interventions aimed at the development of phonological awareness (PA), alphabet knowledge (AK), and early decoding skills (i.e., phonics).

Virtually all studies in this category of interventions included some form of PA training. These interventions involved training children either individually or in small groups to identify sounds in words (e.g., match words with the same initial sound) or, more often, to manipulate sounds in words (e.g., combine sounds to form words, segment or delete parts of words). In some studies, these PA training activities were combined with other code-focused training activities, forming two broad categories of combined interventions. One category of combined interventions included studies in which the activities included both PA training and training activities designed to teach children AK, such as letter names or, occasionally, both letter names and letter sounds. The second category of combined interventions included studies of training activities that combined PA instruction and instruction in some aspect of phonics or decoding. Often, this phonics training involved teaching children about letters and simple decoding tasks involving the use of letter sounds. There were also three studies that evaluated the effectiveness of alphabet instruction alone (all three of these studies in this category examined the impact of exposure to Sesame Street–like video materials).

Overall Estimates of Intervention Impacts: *A large number of studies in this category examined the impacts of the interventions on outcome variables reflecting PA (51 studies), AK (24 studies), reading (36 studies), spelling (15 studies), and oral language (14 studies). Fewer studies of these interventions examined the impacts on outcome variables reflecting general cognitive ability (2 studies); memory (9 studies); print knowledge (5 studies); rapid automatic naming (RAN) (8 studies); reading readiness (3 studies); and writing (5 studies). None of these studies considered the impact of the interventions on visual or perceptual processing as an outcome variable. It should be noted that, although specific tests of cognitive ability or memory per se were not identified in Chapter Two as being particular predictors of later literacy achievement, such measures are clearly implicated in various IQ tests, which were identified as significant predictors in Chapter Two.*

Table 3.1. Estimates of Effect Sizes Across Outcome Domains for Interventions Classified as Code-Focused for Each Dependent Variable

Dependent Variable	Fixed ES	Random ES	95% CI		*N of Studies*	*p* for ES
			Lower Bound	Upper Bound		
AK	0.31	0.38	0.18	0.58	24	0.0002
Cognitive ability	–0.47	–0.41	–0.78	–0.01	2	0.04
Memory	0.20	0.27	0.06	0.48	9	0.01
Oral language	0.27	0.32	0.09	0.56	14	0.008
PA	0.76	0.82	0.68	0.96	51	< 0.0001
Print knowledge	0.44	0.47	0.18	0.76	5	0.0013
RAN	0.35	0.38	0.08	0.69	8	0.013
Reading readiness	0.20	0.20	0.02	0.38	3	0.034
Reading	0.41	0.44	0.27	0.60	36	< 0.0001
Spelling	0.55	0.61	0.43	0.80	15	< 0.0001
Writing	0.43	0.61	0.18	1.04	5	0.006

As can be seen in Table 3.1, code-focused interventions usually had moderate to large effects both on measures of conventional literacy (i.e., reading, spelling) and on measures of precursor literacy skills (e.g., PA, AK). ESs of the interventions across all outcome variables were statistically reliable (i.e., $p < 0.05$). In all but one case, the average ESs for code-focused interventions were positive. Consequently, the results reported in Table 3.1 indicate that code-focused interventions have a significant, substantial, and positive impact both on young children's conventional literacy skills and on early skills that predict later literacy achievement. The largest impact of code-focused interventions was on PA, with an average ES of 0.82. This result means that, on average, children who received a code-focused intervention scored 0.82 of a standard deviation higher on measures of PA than did children who did not receive a code-focused intervention. To put this in context, if the average children not receiving a code-focused intervention scored 100 on a standardized test of PA that had a mean of 100 and a standard deviation of 15, the average children receiving a code-focused intervention scored 112 on the test (i.e., the difference between scoring at the 50th and 79th percentiles).

A summary of the estimates of ESs of code-focused interventions for preschool-age and kindergarten-age children separately is shown in Table 3.3. There were no statistically significant differences in the ES estimates for PA, AK, oral language, reading, and spelling. ESs were somewhat larger for studies that included preschool children than for those that included kindergarten children for AK, reading, and spelling outcomes; these differences were not statistically reliable. The separate ESs for preschool- and kindergarten-age children continued to be statistically reliable (except for the ES estimates for these interventions with oral language outcomes).

Table 3.3. Summary of Effect Sizes for Outcome Variables for Study Classification Based on Age of Children in Study

	ESs for Outcome Variable and (*n*) of Studies Contributing to ES				
Age Group	**PA**	**AK**	**Oral Language**	**Reading**	**Spelling**
Preschool	0.87*** (10)	0.67** (5)	0.26 (3)	0.75** (4)	0.78** (2)
Kindergarten	0.81*** (38)	0.32** (18)	0.34* (11)	0.43*** (30)	0.58*** (13)

*Note: ESs based on random-effect model. *p < 0.05, **p < 0.01, ***p < 0.001.*

Overall, these sub-analyses indicate that the strong, positive, and statistically significant impacts of code-focused interventions on children's skills in the domains of PA, AK, oral language, reading, and spelling reported for the overall analyses hold regardless of the age of the children included in the studies and, for most outcomes, the prior literacy levels of the children included in the studies. These findings are important because they indicate (a) that it is possible to affect substantially those skills that are most predictive of later decoding, reading comprehension, and spelling for preschool-age children; (b) that these interventions show positive effects on reading and spelling skills (presumably mediated, in part, by the positive impacts on PA and AK); (c) that these results can be obtained with preschool-age children as well as with kindergarten children; and (d) that these substantial impacts are consistent regardless of children's existing early literacy skills.

The results of these analyses indicate that the impacts of most code-focused interventions are positive, moderate to large, and statistically reliable across a broad range of key early literacy and reading indicators (i.e., PA, AK, reading, spelling). Not surprisingly, the interventions that did not include a print-focused component (i.e., those with PA training only) had a significantly weaker effect on print-specific outcomes (i.e., AK). Regardless, the results were generally consistent across outcome domains, indicating that interventions that include variations of PA training affect not only PA skills but also measures of reading and spelling. In addition to examining the relative impacts of different types of code-focused interventions, the relative impacts of variations in the nature of the PA interventions were examined. PA varies along at least two independent dimensions: level of linguistic complexity and cognitive operation. Level of linguistic complexity refers to the size of the sound unit on which PA is demonstrated, and it ranges along a continuum from word-level units to phoneme-level units. The target skill of different PA interventions is sometimes one point on this continuum and sometimes multiple levels of this continuum. A common theoretically relevant split on this continuum is phoneme-level tasks or targets (i.e., phonemic awareness) versus sub-phonemic tasks or targets (i.e., syllable awareness, onset-rime awareness). Cognitive operation refers to the type of task performed on these linguistic units and can involve identity (e.g., rhyme oddity detection), synthesis (e.g., blending or putting linguistic units together to form new linguistic units, typically words), or analysis (e.g., separating a linguistic unit from a larger linguistic unit through deletion or counting), with analysis tasks often considered the more developmentally advanced cognitive operation.

Summary and Conclusions: *Results from this meta-analysis of the impacts of code-focused interventions on the early literacy and conventional literacy skills of young children indicate that these interventions yield a moderate to large effect on the predictors of later reading and writing (i.e., PA, AK) and on measures of reading and writing. These effects were robust to variation in the type of code-focused intervention, to variation in children's ages or developmental levels, and to variations in methods of teaching young children PA. At this time, few studies allow fine-grained analysis of other population variables, such as SES, ethnicity, or population density. However, existing studies provide no evidence that the effects of code-focused interventions are altered by these sample characteristics. The majority of code-focused interventions involved some form of PA training activity. Consequently, most of the substantially positive impacts on children's early literacy skills need to be interpreted in this context. That is, these analyses show that some form of PA training, either alone or in combination with more or less complex instruction related to print knowledge (i.e., letter-name instruction, instruction in early decoding skills) is likely to yield growth in children's skills related to later reading and writing achievement. Whereas the literature contains both debate and findings concerning the type of PA training required to produce positive impacts on reading skills, the results of these analyses did not reveal any statistically reliable differences between variations in PA interventions. Categorizing the nature of PA training according to two theoretically relevant dimensions, the level of linguistic complexity that was the focus of the training and the nature of the cognitive operation taught in the PA training, did not indicate that one form of training was more or less effective than another form of training across a range of outcome measures. Importantly, there was no evidence that the effectiveness of code-focused interventions was influenced by age or developmental level of the children. That is, the impacts of code-focused interventions were observed in children whether they were preschool age or kindergarten age, and these interventions were equally successful across a range of levels of prior literacy knowledge (from minimal AK to being able to read). These findings indicate that there is not a point along either an age or a developmental continuum at which code-focused interventions become more or less beneficial to children's early literacy skills. The findings also suggest that there is no preexisting level of knowledge or skill that children must attain before these interventions can be used successfully.*

Most of the code-based interventions tested here are not available commercially. The majority of interventions included in these analyses were designed and implemented by researchers, and there was a great deal of variability in the specifics of the various interventions. This suggests that some instructional variations may be more effective than others, so, ultimately, it will be important and necessary to distill the specific components of these interventions to determine what types of intervention activities produce the most positive effects on children's early literacy skills. It is not sufficient to merely label interventions as PA training, phonics, or code focused for them to be effective. Successful code-focused interventions will likely include all or most of the components of the interventions noted in this meta-analysis; thus, interventions should include PA training with activities involving higher-level PA skills, such as actively engaging in analysis or synthesis of words at the syllable, onset-rime, or phoneme level with feedback on correct and incorrect responses. Although PA training can be conducted alone, the results of this meta-analysis suggest that there

may be an advantage of combining such training with activities designed to teach children about specific aspects of print, such as letter names and letter sounds.

The majority of the code-focused interventions summarized by this meta-analysis were conducted as either individual-level or small group–level interventions. There was no evidence that whole-class or large-group code-focused interventions will produce similar-sized effects on children's reading-related skills. While it is not the case that research has shown whole-class or large-group implementation of code instruction to be ineffective (such approaches were not tested at all), it would be a mistake to assume that teachers could successfully implement these interventions with large groups. Extant studies do not allow an adequate examination of the relative effectiveness of code-focused instruction for specific subpopulations of children. To their credit, most studies included mixed samples of children from different socioeconomic backgrounds, ethnic groups, and living environments (e.g., population density). Unfortunately, the data in these studies were usually not reported in a way that differential effectiveness could be studied. Although the early childhood education field is interested in specific questions about which interventions will work best for children living in poverty, children from traditionally underrepresented ethnic groups, children who are English-language learners, or children growing up in rural or urban environments, there are not yet studies focusing on these specific subpopulations or that allow examination of these subpopulations to answer these questions. Given the clear success of code-focused instruction with these mixed populations, it seems prudent to make such instruction available to all populations of young children, at least until research more directly addresses this question.

Conclusions:

Recommendations:

Development of Model District Reading Plan

On November 12, a work group completed their four-month effort on the model statewide, comprehensive district reading plan. Dr. Rainey Knight, former superintendent of Darlington County Schools, led the group of instructional leaders in K-12 and higher education on developing the plan that is required in the proposed legislation. Currently, 12 districts have agreed to pilot the reading plan. The purpose of the pilot will be for districts to continue to guide the EOC in the development of the plan by assembling a district literacy team whose responsibility will be to create a plan using the model developed. Pilot districts will submit plans beginning in January 2014 using a web-based text entry system.

Additionally, Dr. Knight was asked to develop a guidance document for school districts about the funding districts will receive to begin offering summer reading camps in summer 2014.

Stakeholders involved:

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Stacey Bannister, Teacher, Darlington County Schools

Tara Dean, Assistant Superintendent for Curriculum and Instruction, Laurens 55

Carrie Daniel, Teacher, Greenwood 51

Becca Doswell, Office of Instructional Practices and Evaluation, SC Dept. of Education

Angela Enlow, Teacher, Richland One

Dr. Marcella Heyward-Evans, Chief Instructional Officer, Lexington School District 2

Grace Griffin, Teacher, 4th Grade, Sandy Run School

Michael Guliano, Lexington School District 5

Patti Hammel, Executive Director for Student Performance and Federal Programs, Georgetown County School District

Katty Hite, Reading Specialist/READ 120 Teacher, Davis Early Childhood Center for Technology

Dr. Baron Holmes, University of SC

Sheila Huckabee Quinn, Assistant Superintendent, Administrative Services, Clover School District

Jacqueline Jamison, Executive Director of Academic, Orangeburg School District 5

Harriet Jaworowski, Associate Superintendent, Rock Hill School District 3

Neely Kelly, Elementary Curriculum Coordinator, Fairfield County School District

Nancy Lind, Principal, Meadow Glen Elementary School, Lexington One

Dr. Jane Clark Lindle, Professor, Clemson University

Michelle Martin, Augusta Baker Chair for Childhood Literacy, University of SC

Christina Melton, Chief Instructional Officer, School District 5 of Lexington and Richland Counties

Dr. Heidi Mills, University of South Carolina

Barbara Nesbitt, Early Childhood, Elementary and Instructional Technology Coordinator, Pickens County School District

Dr. Kevin O'Gorman, Chief Academic Officer, Berkeley County School District

Felicia Oliver, Literacy Coordinator, Spartanburg School District 2

Dr. Mildred Rowland. Director of Instruction and Assessment, York School District 1

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Dr. Diane Stephens, University of SC

Gloria Talley, Chief Academic Officer, Lexington School District 1

Jennifer Thomas, Teacher, Hollywood Elem. School, Saluda School District

Jennifer Young, High Progress Literacy Associates

Members of the SCASA Instructional Leaders Roundtable *(25 members responded to request to offer feedback to the model district reading plan following a request made on October 17.)*

Meeting dates:

August 27, 10 AM-2 PM
October 1, 10 AM-2 PM
November 12, 10 AM-2 PM

South Carolina Read to Succeed
Draft District Reading Proficiency Reading Plan

Revised Draft – as of January 9, 2014

Goal:
Ensure that 95% of students are reading on grade level by 2020

(2020 Vision adopted by the Education Oversight Committee in 2009)

District Reading Proficiency Plan Guide

Introduction

Reading proficiency is a fundamental life skill vital for the educational and economic success of our citizens and the State. Every student should develop and sustain high levels of reading proficiency prekindergarten through grade 12 (4K-12). Every student should be able to read, write and think at or above grade level and be prepared to pursue careers and college after graduation from high school. This helps ensure that the state of South Carolina has a highly employable population and a highly educated workforce.

Based on the 2013 state reading data, however, only 82.9 % of students meet the third grade reading standard (Level 3 or above) as measured by the state's summative assessment, the Palmetto Assessment of State Standards (PASS). PASS data indicate the percentage of students who meet the grade level reading standard generally declines each year as students progress from elementary to middle school.

To ensure that, by 2020, 95% of all students will be reading on grade level legislation is pending in the South Carolina General Assembly that proposes a statewide reading initiative, *Read to Succeed*. The legislation is a comprehensive and systemic approach to improve the reading proficiency for students in public schools prekindergarten through grade 12.

Purpose of the District Reading Proficiency Plan Guide

The proposed *Read to Succeed* legislation will require the state to develop a state reading plan. In addition, districts would be required to develop a comprehensive, systemic district reading proficiency plan (Plan). This Guide is in draft format and is intended to provide support and assistance to districts and schools by promoting critical thinking, discussion, and reflection among educators as they develop, implement, sustain and refine their plans. (Based on the final legislation and feedback from districts, the Plan will be modified.)

Rationale for the District Reading Proficiency Plan

By providing direction, guidance and coordination to its schools, school districts play a critical role in improving the reading proficiency levels of its students. Districts not only take the lead in the development and implementation of a reading plan; they are also responsible for ensuring the progress of students as readers and writers, monitoring the impact of the Plan and using data to make improvements to the Plan in subsequent years.

Essential Components of District Reading Proficiency Plan

The District Reading Proficiency Plan is divided into four components: (1) Curriculum Instruction and Assessment; (2) Instructional Leadership; (3) Professional Expertise and (4) Planning and Evaluation. Each component is designed to develop and support reading proficiency at all grade levels. Each component lists action statements, which reflect the intent of the proposed *Read to Succeed* legislation. Questions then expand upon the intent of the action statement. Districts are required to provide detailed answers to all questions and to do so in a manner consistent with the legislation. The cumulative responses should detail how:

- measurable student achievement goals are clearly established and clearly described.
- data analysis is an ongoing process that drives decisions.
- research-based, data-driven reading instruction is provided for all students.

- a supplemental, research and data-based support system is provided to all students who cannot yet comprehend grade level text.
- professional learning is meaningful and systemic.
- district and school leadership are actively involved in the planning, implementing and monitoring of the district and school plans.

Role of the District in the Development of the Plan

Districts should create a District Literacy Team whose responsibility is to provide the leadership, support, direction and guidance in the development and implementation of the District Reading Proficiency Plan. The District Literacy Team should reflect members who represent all grade spans (early childhood, elementary, middle and high) and include members with responsibilities in the areas of reading, writing, exceptional education, etc. Each District's Reading Proficiency Plan should be individualized to reflect the strengths and needs of its educators and students. The district should view schools on an individual basis and distribute resources based on the students' and teachers' strengths and needs. The district should design a method to distribute and communicate the Plan throughout the district including students, teachers, parents, and community. The Plan should be a guide to help all educators understand the importance of and urgency for students to attain higher levels of reading proficiency.

Timeline for Submitting Plan

The District's Reading Proficiency Plan narrative will be completed through a web based text entry system. Plans are due to the Read to Succeed office by

_____ _____ , _____ for a preliminary review. The Read to Succeed office will review all district plans online and districts will receive feedback on their plans through an online comment process. Either an approved or a revised status will be submitted to districts by _____ _____ , _____. Plans requiring revisions must be received by the Read to Succeed Office by _____ _____,

South Carolina *Read to Succeed*

District Reading Proficiency Plan Template

Part I. Curriculum, Instruction and Assessment

The district should base its district reading proficiency plan and reading instruction on the South Carolina English/language arts standards. The standards are located at: http://www.ed.sc.gov. The reading materials a district selects should be research-based and support high quality classroom instruction. Resources and materials used in the reading program should include a diverse selection of grade-level texts written on a wide range of reading levels matched to the reading and interest levels of students.

In grades 4K-5, there should be at least 90 minutes of uninterrupted instructional time for reading that includes a balance of whole group and small group differentiated instruction. In addition across all grades, students should spend at least 60 minutes a day engaged in reading, writing, and viewing texts in English Language Arts, social studies, mathematics, and, as applicable, art, career and technology education, and physical and health education. Teachers should help students understand the discipline-specific features or content-area print and non-print texts. They should help students learn vocabulary, including the content-area vocabulary, understand the various genres, purposes, audiences and conventions of print and be able to use specialized literacy skills and strategies (e.g., morphemic analysis). Teachers should also help students make sense of information, which is new to them, provide opportunities for students to question and discuss print and non-print texts with peers to deepen understanding. Students must focus on reading as meaning making rather than on reading at the word level, stop when something does not make sense, and problem-solve at the text, chapter, and paragraph and word level.

To achieve these goals, all curricular and instructional decisions for in-classroom and supplemental support should be grounded in text-based formative

assessments. In all classrooms, teachers should use the data from such assessments to make decisions about whole group instruction, to flexibly group students and inform one-on-one conferences. Data should also inform instruction in all supplemental settings.

In all classrooms, teachers should provide high-quality instruction, which supports students as readers, writers, speakers, listeners and viewers of print and non-print texts. Teachers should ensure that, without supplement support, 80% of the students in a heterogeneous group yearly make at least a year's progress on a text-based measure of comprehension. Students who begin the year not yet able to comprehend texts with which have a grade equivalent of six months or more lower than the students' grade level should receive intervention services both from the classroom teacher and a reading interventionist (in both cases, via small group or one-on-one instruction). Reading interventionists who have a literacy teacher add-on endorsement are responsible for providing supplement support. With support from both the classroom teachers and reading interventionists, students receiving supplement services should make, on average, a year and a half growth each year. (For some of these students, progress might be slow at first and then accelerate, e.g., a year's growth the first year and two year's growth the second). The goal is to have students independently comprehend grade-appropriate text and be discontinued from intervention services.

All teachers should periodically reassess curriculum, instruction and engagement of students to determine if they are helping each student progress as a proficient reader and writer. Teachers should make modifications as appropriate so that all students will be able to comprehend grade-appropriate print and non-print texts in all content areas.

Part I. Curriculum, Instruction and Assessment

Section for Elementary Schools (grades 4K-5)

Action #1: Ensure that all 4K-5 students are provided with at least ninety minutes of daily uninterrupted reading and writing instruction and that there are high volumes of reading and writing in all content areas.

1. How will your district and school ensure that students have this amount of uninterrupted reading and writing time?

2. How will this time be structured to ensure that all students are fully engaged as readers and writers during this time?

Action #2: Ensure that information from text-based measures informs instruction

1. How will your district ensure that all the members of district and 4K – 5 school-literacy teams (classroom and interventionist teachers, school and district administrators with expertise in reading, other support staff, as applicable) are able to administer and interpret text-based assessment measures and use the results to inform and differentiate instruction?

2. What steps will your district take to intervene to improve instruction in 4K – 5 classrooms and supplemental/intervention settings if students are not making adequate progress?

Action #3: Ensure high quality text-based and research-based Tier One Instruction and Intervention for all 4K – 5 students.

1. How will your district ensure that 4K – 5 school staff are making effective research-based and text-based decisions grounded in data from students' responses to instruction?

2. List the grades 4K – 5 research-based reading materials to be used in Tier 1 instruction.

3. How will your district ensure 4K – 5 teachers emphasize complex text and provide opportunities for students to progress along a continuum of increasing text complexity in their reading?

4. How will your district ensure teachers and reading staff are incorporating effective instructional strategies into daily instruction?

5. How will your district periodically reassess their 4K – 5 curriculum, instruction and engagement of students to determine if they are helping each student progress as a proficient reader and a proficient writer and make modifications as appropriate?

Action #4: Document student readiness/achievement.

Part A: Early Childhood Readiness

1. How will the district ensure there is a process at each 4K-K school that addresses the readiness screening for each 4K-K student? How will the district be assured each 4K-K student is assessed by the 45th day of school?

2. How will the district ensure the school has a plan in place for each student whose readiness assessment indicates the student is below the national standard for school readiness?

3. How will the district ensure each 4K-K school provides the results of the readiness assessment, in writing, to the parent/guardian?

Part B: 4K - 5 Achievement

1. Describe your district plan to monitor, analyze and share the reading progress of grades 4K – 5 students using text based assessments.

2. What assessments will your district implement for grades 4K – 5 for screening, for diagnostics and for progress monitoring? Include information about alternate assessments for students with disabilities, LEP students, etc.

Action #5: Determine eligibility for Tier Two Intervention

1. How will your district use state guidelines to determine which 4K - 5 students are not yet able to comprehend grade-level, print and non-print texts and are therefore eligible for Tier Two intervention during the school year and/or in the summer reading camps?

2. What is the process for ensuring that parents/guardians are notified in writing that the student is not able to read grade level text and is eligible for intervention services?

3. How will your district ensure that all 4K - 5 students who are not able to comprehend grade level material are provided with supplemental support?

4. What before-school, after-school, summer reading camp activities and mentoring activities will be utilized to support and encourage reading and writing for 4K – 5 students outside of school? Include how these activities will be linked to school instruction.

5. How will the district ensure schools report the results to the district of the initial assessments and follow up progress monitoring results for each student who is substantially not demonstrating proficiency in reading?

Action #6: Provide at least 30 minutes daily of supplemental Tier Two Intervention for 4K-3 students

1. How will your district ensure that 4K – 5 students' individual strengths and needs are the primary consideration for grouping students for supplemental instruction?

2. What modifications will be made to the daily schedule to accomplish this task?

3. What research-based materials will be used for grades 4K – 5 reading interventions during the school year and as part of the summer reading camps?

4. What are the district expectations as to the design of the summer reading camps? Include the schedule, personnel, student/teacher ratio, description of instruction, progress monitoring of students, interventions planned, etc.

Action #7: Track progress in Tier Two Intervention

1. How often does your district expect school personnel to conference and share progress monitoring data with parents/guardians of grade 4K- 5 students?

2. When students who are receiving supplemental support do not make, more than a year's growth in a year, how will your district seek support within and outside the district to ensure students are making the necessary growth?

Action #8: Review of Grade 3 Student Reading Results

1. How will the district ensure schools notify parents, in writing, at the beginning of grade 3, if the student is substantially not meeting reading proficiency and may be retained at the end of the grade 3? How will the district ensure schools continue to provide parents notification of the student's progress each month and at the end of each grading period? (Written notification should include interventions, suggestions for assistance to be provided at home student progress using formative assessments, classroom grades, observations, tests, etc.)

2. How will the reinforcement/enhancement class for a retained grade 3 student be structured to accelerate his/her learning and address the specific needs of the student? Include personnel, student/teacher ratio, time scheduled for reading, curriculum, instructional strategies, interventions, progress monitoring, etc.)

Section for Middle Schools (grades 6-8)

Action #9: Ensure that there are at least 60 minutes of reading and writing across all content areas in grades 6 – 8 daily.

1. How will your district ensure all students in grades 6 – 8 have a total of 60 minutes of reading and writing time across all subjects daily?

2. How will all teachers develop and incorporate reading into all content areas in grades 6 – 8 to extend and build discussions of text in order to deepen understanding of concepts?

Action #10: Ensure that information from text-based measures informs instruction

1. How will your district ensure that all the members of district and grades 6 - 8 school-literacy teams (classroom and interventionist teachers, school and

district administrators with expertise in reading, other support staff, as applicable) are able to administer and interpret text-based assessment measures and use results to inform and differentiate instruction?

2. What steps will your district take to intervene to improve instruction in grades 6 - 8 classrooms and supplemental/intervention settings if students are not making adequate progress?

Action #11: Ensure high quality text-based and research-based Tier One Instruction and Intervention for grade 6 - 8 students.

1. List the grades 6- 8 research-based reading materials to be used in Tier 1 instruction.

2. How will your district ensure all grade 6 - 8 teachers emphasize complex text and provide opportunities for students to progress along a continuum of increasing text complexity in their reading?

3. How will your district ensure teachers and reading staff are incorporating effective instructional strategies into daily instruction?

4. How will your district periodically monitor and reassess their grade 6- 8 curriculum, instruction and engagement of students to determine if they are helping each student progress as a proficient reader and a proficient writer and make modifications as appropriate?

Action #12: Document student readiness/achievement
Part A. Not Applicable
Part B: Grades 6- 8 Achievement

1. What assessments will your district implement in grades 6 - 8 for screening and progress monitoring? Include information about alternate assessments for students with disabilities, LEP students, etc.

2. Describe how your district will monitor, analyze and share grade 6 - 8 student data student progress with parents/guardians, students, teachers and administrators?

Action #13: Determine eligibility for Tier Two Intervention for Grades 6 - 8

1. How will your district use state guidelines to determine which grade 6 - 8 students are not yet able to comprehend grade-level, print and non-print texts and are therefore eligible for Tier Two intervention during the school year?

2. What is the process for ensuring that parents/guardians are notified in writing that the student is not able to read grade level text and is eligible for intervention services?

3. How will your district ensure that all grade 6 - 8 students who are not able to comprehend grade level material are provided with supplemental support?

4. What before-school, after-school, summer activities and/or mentoring activities will be utilized to support and encourage reading and writing for grade 6 - 8 students outside of school? Include how these activities will be linked to school instruction.

5. How will the district ensure schools report the results to the district of the initial assessments and follow up progress monitoring results for each student whom is substantially no demonstrating proficiency in reading?

Action 14: Provide at least 30 minutes daily of supplemental Tier Two Intervention for grades 6 – 8.

1. How will your district ensure that students receive effective Tier Two intervention customized to the individual needs of students?

2. What modifications will be made to the daily schedule to accomplish this task?

Action #15: Track progress in Tier Two Intervention

1. How often does your district expect school personnel to conference and share progress monitoring data with parents/guardians of grade 6 -8 students?

2. When students who are receiving supplemental support do not make, more than a year's growth in a year, how will your district seek support within and outside the district to ensure students are making the necessary growth in reading?

Section for High Schools (grades 9 - 12)

Action #16: Ensure that there are at least 60 minutes of reading and writing across all content areas in grades 9 - 12 daily.

1. How will your district ensure all students in grades 9 - 12 have a total of 60 minutes of reading and writing time across all subjects daily?

2. How will all teachers develop and incorporate reading into all content areas in grades 9 - 12 to extend and build discussions of text in order to deepen understanding of concepts?

Action #17: Ensure that information from text-based measures informs instruction

1. How will your district ensure that all the members of district and grades 9 - 12 school-literacy teams (classroom and interventionist teachers, school and district administrators with expertise in reading, other support staff, as applicable) are able to administer and interpret text-based assessment measures and use results to inform and differentiate instruction?

2. What steps will your district take to intervene to improve instruction in grades 9 - 12 classrooms and supplemental/intervention settings if students are not making adequate progress?

Action #18: Ensure high quality text-based and research-based Tier One Instruction and Intervention for grade 9 - 12 students.

1. List the grade 9 - 12 evidence-based reading materials to be used in Tier 1 instruction.

2. How will your district ensure all grade 9 - 12 teachers emphasize complex text and provide opportunities for students to progress along a continuum of increasing text complexity in their reading?

3. How will your district teachers and reading staff are incorporating effective reading strategies into daily instruction?

4. How will your district periodically reassess their grade 9 -12 curriculum, instruction and engagement of students to determine if they are helping each student progress as a proficient reader and a proficient writer and make modifications as appropriate?

Action #19: Document student readiness/achievement
Part A. Not Applicable
Part B: Grades 9 - 12 Achievement

1. What assessments will your district implement in grades 9 - 12 for screening and progress monitoring? Include information about alternate assessments for students with disabilities, LEP students, etc.

2 Describe how your district will monitor, analyze and share grade 9 - 12 data about student progress with students, teachers, administrators and parents/guardians?

Action #20: Determine eligibility for Tier Two Intervention for Grades 9 -12

1. How will your district use state guidelines to determine which grade 9 - 12 students are not yet able to comprehend grade-level, print and non-print texts and are therefore eligible for Tier Two intervention during the school year?

2. What is the process for ensuring that parents/guardians are notified in writing that the student is not able to read grade level text and is eligible for intervention services?

3. How will your district ensure that all grade 9 - 12 students who are not able to comprehend grade level material are provided with supplemental support?

4. What before-school, after-school, summer activities and/or mentoring activities will be utilized to support and encourage reading and writing for grade 9 - 12 students outside of school? Include how these activities will be linked to school instruction.

5. How will the district ensure schools report the results to the district of the initial assessments and follow up progress monitoring results for each student whom is substantially no demonstrating proficiency in reading?

Action 21: Provide at least 30 minutes daily of supplemental Tier Two Intervention for grades 9 - 12.

1. How will your district ensure that students receive effective Tier Two intervention customized to the individual needs of students?

2. What modifications will be made to the daily schedule to accomplish this task?

Action #22: Track progress in Tier Two Intervention

1. How often does your district expect school personnel to conference and share progress monitoring data with parents/guardians of grade 9 -12 students?

2. When students who are receiving supplemental support do not make, more than a year's growth in a year, how will your district seek support within and outside the district to alter that trajectory? How will student progress be monitored?

Section for All Grade Levels (4K – 12)

Action #23: Increase access to texts students can comprehend

1. How will districts ensure that all classrooms have books on high-interest topics, written at a range of grade levels?

2. How will districts ensure that all students have access, across all content areas to a wide selections of print and non-print texts over a wide range of genres and written on a wide range of reading levels which match the reading levels of students?

Action #24: Increase the volume of engaged reading and writing students do in and out of school.

1. How will districts ensure they increase the amount of time 4K – 5 students spend during the school year in engaged reading and writing (a) in school? (b) out of school (including homework and voluntary reading)?

2. How will districts document and report reading and writing volume in and out of school?

Action #25: Help parents/guardians understand how they can support the student as a reader and writer at home.

1. How will parents/guardians be informed about the school's reading goals/programs, the status of their student's progress towards his/her goals, and what the school is doing if the student is not substantially meeting his/her goals?

2. How will districts ensure that all parents/guardians are fully informed about what they can do at home to support their student as a reader and writer?

3. What materials/information/resources will the district provide to parents to support students as readers and writers?

Action #26: Develop partnerships "with county libraries, volunteers, social and community organizations, faith-based organizations, pediatric/family practice medical personnel and school media specialists to promote reading."

1. What are the out-of-school agencies and organizations your district will coordinate with to promote community literacy? Include how each partner will assist and support your district reading plan.

2. Who is responsible at the district level for coordinating partnerships in the communities? How will the district ensure schools develop and implement partnerships?

Part II. The Role of Instructional Leadership

At both the school and district levels, district and school leaders play a critical role in planning, implementing and monitoring of the District Reading Proficiency Plan. As such, district and school leaders need the knowledge and skills to understand and support the needs of classroom teachers, coaches and interventionists in this endeavor. Strong literacy leadership at both the district and school levels is essential to the success of a district and school reading plan and ultimately to the progress of the students.

Each district should create a district literacy team whose responsibility is to plan and design the district reading proficiency plan; to provide support to schools in the implementation of the Plan; to guide and provide appropriate professional learning and to monitor and provide feedback to schools regarding implementation of the Plan. The district literacy team should continuously monitor, assess, review and revise all aspects of the Plan on a periodic basis and provide feedback to schools. In addition, the district leadership team should devise a mechanism for receiving feedback from schools regarding their needs and concerns during implementation in order to update and make changes to the district plan.

At the school level, the principal should oversee the reading program and work collaboratively with teacher leaders, coaches, interventions and others on a school literacy team. The school literacy team should take the lead on developing a school plan which accesses the expertise of all educators in the building. They should solicit feedback on the school plan from parents and other stakeholders. Community partnerships and resources will be necessary for the plan's success. The more opportunities the plan has for exposure to its stakeholders the greater chance all perspectives will have been considered for inclusion in the plan and thus a greater degree of ownership in the school plan.

The school plan should be consistent with the state and district plan and, as such, include a system for ensuring that in all classrooms, students have ample time to read, access to books they can read and instruction (whole-group, small group and one-on-one) which helps them develop their ability to comprehend grade level texts. The school literacy team, working collaboratively with classroom teachers, should monitor the reading growth of all students, determine if supplemental support is needed and oversee supplemental instruction to ensure that student needs and strengths are being addressed in a manner that leads to reading growth. Finally the school literacy team should coordinate resource support so that student needs are met in a cohesive and consistent manner.

Part II. Role of Instructional Leadership

Action #1: Ensure that all district and school administrators excel as literacy leaders.

1. How will your district ensure that principals and district leaders have the knowledge base needed to be literacy leaders who provide appropriate support to teachers?

2. How will your district ensure that principals are regularly in classrooms observing and consulting with teachers about the progress of the students?

3. How will your district ensure that principals are using their literacy knowledge effectively to support teachers?

4. For teachers whose students are not making adequate progress in reading, how will the district assist and support teachers in improving reading instruction and assessment practices?

5. For principals whose schools are not making adequate progress in reading, how will the district assist and support principals in making improvements in reading instruction and assessment practices?

Action #2: Ensure that all staff is aware of their responsibilities relative to the literacy growth of students.

1. How will your district ensure that all district and school staff understand their particular responsibilities relative to helping all students comprehend grade level texts?

2. How will your district form school and district data/literacy teams to ensure consistency of approach across service providers (e.g., reading interventionists, speech teachers, regular education teachers, school psychologists, exceptional education teachers, reading coaches, ESOL teachers)?

3. Until all teachers gain their literacy teacher endorsement, how will your district ensure that only teachers who hold an add-on certification as a Literacy Teacher provide interventions?

4. If your district employs literacy coaches, how will the district ensure that only teachers who hold an add-on certification as a Literacy Coach serve in that role?

5. If your district employs literacy coaches, how will the district provide leadership and support in defining the role of a coach and communicating that to staff?

Action #3. Ensure that all staff, parents, and guardians understand the state, district and school plans.

1. How will your district ensure that all teachers and administrators in the district understand the content and expectations of district and school plans?

2. How will your district share this information with staff and parents/guardians?

Part III. Ensuring Professional Expertise

High quality, sustained professional learning opportunities based on the needs of teachers and principals ensures that students receive the kind of instruction that leads to improved student achievement. The literature suggests that effective learning opportunities are long term, site-based, work-embedded, and strongly supported by school leaders, including the school principal. Professional learning provided for the implementation of the Plan is a multi-year endeavor, which progressively builds on the previous year's results to strengthen, assist and support the knowledge base and practices of all participants.

Districts are expected to develop a professional learning plan for all teachers, reading coaches, interventionists, school psychologists and school-based administrators as well as district office staff whose responsibility it is to assist with the reading proficiency. This plan should be grounded in an assessment of the strengths and needs of all these individuals. All involved individuals should know how to:

1. Utilize and interpret formative assessments.
2. Use student data to guide instruction.

3. Understand and implement research-based reading practices.
4. Understand and implement the response to intervention (RTI) model,
5. And understand and utilize in-class and supplemental interventions for struggling readers.

Administrators and teacher leaders should be provided opportunities to understand the implementation of the district reading proficiency plan including effective monitoring of the Plan, importance of classroom observations and follow-up discussions by district and school literacy teams, the role of the district and school literacy teams and the role of the coaches and interventionists.

Part III. Ensuring Professional Expertise

Action #1: Ensure that all teachers and administrators have their required add-on certifications and course work

1. What is your district plan to ensure that all current teachers and administrators have their required add-on certifications and course work within the time frame required by the law?

Action #2: Provide Professional Learning

1. How will the district ensure educators in the district have access to comprehensive, sustained and intensive professional learning needed to ensure the district and school plans are implemented effectively?

2. What professional learning will content area teachers receive related to improving reading instruction in the content areas?

3. Provide the upcoming year's district schedule for professional learning that will build district capacity in literacy for all stakeholders: paraprofessionals, teachers, coaches, principals, and central office personnel.

4. How will the district and schools ensure that teacher and administrator needs, including student assessment data, guide professional learning?

5. How will your district monitor and determine the effectiveness of professional learning? How will modifications be made as needed?

Part IV. Planning and Evaluation

Planning and evaluation are part of a continuous cycle the district should use to plan, develop, implements, assess, refine and evaluate the district reading proficiency plan. The Plan is a roadmap created by each district to guide and direct the actions of the district and schools in implementing its reading plan. It is also a working document that should be reviewed and refined on an ongoing basis. The strengths and challenges of the Plan as evidenced during implementation should initiate discussions among district and school staff. These discussions along with student data and teacher needs identify areas for improvement year to year.

The district literacy team along with input from the schools should establish a series of incremental goals that move the district towards meeting the state vision of 95% of students reading on grade level by 2020. The goals should be in the SMART (Specific, Measureable, Attainable, Realistic and Timely) format. It is expected that incremental goals will be written for each grade level (4K through grade 10) to cover the three-year period of 2015-16, 2016-17 and 2017-18.

Part IV. Planning and Evaluation

Action #1: Design, Secure Funding for, and Implement a District Plan

1. Who in your district is the contact person for the district reading plan? Contact address? Contact email? Contact phone number?

2. How will your district literacy leadership team develop, implement, monitor and sustain the district reading plan?

3. How will your district fund its reading plan? *(Sample format to be provided.)*

Action #2: Design and Secure Funding for Plans for Individual Schools

1. How will your district oversee the development of the school plans?

2. How will the schools with the greatest needs receive the greatest support?

3. What are the district expectations for the development of the school literacy teams?

Action #3: Annually report student progress toward the district's reading proficiency goals.

1. What are your district's measurable student achievement goals for reading for 2015-2106? For 2016-17? For 2017-18? Establish reasonable, incremental goals over these three years. Keep in mind the 2020 state goal is 95% of students will meet reading proficiency. Include goals for grades 4K - 10. (Ensure goals are in SMART format. Format to be provided.)

Action #4: Annually review all aspects of the district plan, addressing its effectiveness and making any needed modifications

1. What data will your district use to determine the effectiveness of your district literacy plan? Include data such as formative assessment, summative assessment, teacher effectiveness, professional learning quality and implementation, etc.

2. How and when will this analysis of the effectiveness of the Plan be carried out?

3. How will the district ensure that the district and school leadership communicates on a regular basis concerning program progress, program challenges and successes to appropriate stakeholder groups?

4. How will decisions be made about where additional support is needed?

Action #5: Address the effectiveness of school reading plans.

1. What data will each school use to determine the effectiveness of their school literacy plan? Include data such as formative assessment, summative assessment, teacher effectiveness, professional learning quality and implementation, etc.)

Proposed Plans for Piloting the Draft District Reading Proficiency Plan

In anticipation of the South Carolina Legislature adopting legislation to create a statewide, comprehensive reading plan, *Read to Succeed*, the Education Oversight Committee (EOC) has been charged with developing a draft of a District Reading Proficiency Plan. It is anticipated the District Reading Proficiency Plan would guide districts in their thinking, discussion and reflection as they develop, implement, sustain and refine their plans.

During the fall of 2013, the EOC established a District Reading Plan Committee, composed of school and district level instructional leaders, district and school administrators, and higher education faculty whose charge was to provide guidance and direction for a District Reading Proficiency Plan template. The Committee met several times and provided invaluable expertise and suggestions in the creation of a draft District Reading Proficiency Plan template. In addition, the Committee shared recommendations and considerations for developing and implementing the Plan, including professional learning needs, funding concerns, and resource allocations.

In order to provide for additional feedback and input from local districts, the EOC is piloting the draft District Reading Proficiency Plan in twelve school districts across the state in the spring of 2014. These districts are: Anderson 2, Anderson, 3 Barnwell 45, Darlington, Florence 1, Georgetown, Greenwood 50, Orangeburg 5, Pickens, Spartanburg 2, Williamsburg, and York 1. The purpose of the pilot will be for districts to continue to guide the EOC in the development of the plan by assembling a district literacy team whose responsibility will be to create its district reading plan using the District Reading Proficiency Plan template. Pilot districts will submit their plan using a web based text entry system.

Each district will be provided support in this initiative with face-to-face meetings, telephone conferences and electronic meetings, as needed. The timeline for the pilot is January through March. Districts have the flexibility to complete the plan by any means that works for them.

The deliverables for the pilot will include a completed District Reading Proficiency Plan including questions, comments and concerns expressed by districts regarding the questions in the plan, the format of the plan, the materials needed for implementation of the plan, the personnel needed for implementation of the plan, certification requirements for educators, and the overall funding needs for the plan. The EOC will also ask districts to document the total time required to complete the plan.

The feedback received from the districts regarding the creation of their Plan will assist the EOC in making the necessary revisions to the Plan template as well as to the overall implementation of the proposed *Read to Succeed* legislation pending in the S.C. General Assembly.

Proposed Guidelines for 2014 Summer Reading Camps

In 2013, the South Carolina Legislature funded the 2014 Summer Reading Camps to support and assist third grade students with reading difficulties. The purpose of the summer reading camps will be to provide opportunities for students who scored Not Met 1 on the Palmetto Assessment State Standards (PASS) to improve and advance their reading skills. During the summer reading camp experience, high quality reading instruction will be provided in order for students to achieve the goal of reading on grade level.

For the summer of 2014, districts should follow district policy/guidelines regarding retention for grade 3 students. The 2014 Summer Reading Camps are meant to provide an additional opportunity to struggling readers in preparation for grade 4. In addition, a district may offer summer reading camps for students who are not exhibiting reading proficiency in prekindergarten through grade 2 and may charge fees based on a sliding scale pursuant to Section 59-19-90 of the 1976 Code. Priority seats for the summer reading camps should be given to third grade students with reading difficulties.

Funding for the 2014 Summer Reading Camps was determined by the number of students who scored Not Met 1 on the reading portion of PASS in 2013. In the spring of 2014, districts should carefully review all students' progress in third grade reading for the 2013-14 school year to determine which students are substantially not demonstrating reading proficiency at the third grade level. A variety of data points should be included in the student review such as teacher observations, teacher grades, progress monitoring results, and benchmark assessment results to determine if a student is substantially not demonstrating reading proficiency. (Note: PASS scores will not available prior to the start of the reading camp.)

Students who are not substantially demonstrating reading proficiency should be invited and encouraged to attend the summer reading camp for the purpose of improving their reading skills, however, students are not required to attend.

Districts must adhere to the following requirements for its summer reading camps.

1. The reading camp must be six to eight weeks in length.
2. The reading camp must be four to five days per week and include at least five and one-half hours of instructional time daily.
3. The reading camp classes must be taught by compensated, licensed teachers who have demonstrated substantial success in helping students comprehend grade level texts.

Draft

Districts should consider the following recommendations in implementing its reading camps.

1. Create a program designed to: a. teach students strategies to assist them in understanding the meaning of what they have read as opposed to reading words; b. make the reading experience pleasurable for students, building upon the interest of students in the program; and c. promote the belief in students that they can be successful readers, developing and building their self-efficacy.
2. Establish partnerships to provide mentors, tutors and/or instructional assistants with community-based organizations such as the Boys & Girls Clubs, YMCA, PTOs, county libraries, parent volunteers, etc.; faith-based organizations; local colleges/universities; nonprofits such as Save the Children and Children's Defense Fund Freedom Schools.
3. Establish class sizes of no more than 15 students per licensed teacher.
4. Licensed teachers should have expertise in tailoring instruction to meet the individual needs of students as well as in accelerating student learning.
5. Ensure the focus of the camp is on intensive reading intervention.
6. Utilize evidence-based instructional materials in the reading program to include components of learning to read, i.e., oral language, phonics, phonemic awareness, vocabulary, fluency and comprehension.
7. Utilize a response to intervention system for each site. Administer a progress monitoring assessment to each student within the third day of the reading camp and establish appropriate intervention(s) immediately. Periodically re-assess each student to determine the progress of the student and the effectiveness of the instruction.
8. Establish a data system to record the reading progress of each child.
9. Plan to actively involve parents/guardians in supporting their child in developing his/her reading skills during the camp participation such as creating a Read to Parent Day, sending home daily reading activities parents can do with their child, signing up for a library card, etc.
10. Provide access to the media center for use in schools as well as necessary technology and computer labs.
11. Ensure the onsite camp administrator/supervisor monitors instruction daily.
12. Develop a system to communicate with parents throughout the camp experience and consider integrating a family night or other opportunity to promote family literacy and showcase the work of the students.

Draft

13. Consider funding sources in addition to the state allocation such as IDEA, Title 3, Title 1, etc.
14. Consider providing each child with a certain number of books to take home at the end of the camp to reinforce reading strategies.
15. Consider a thematic approach to the camp structure such as careers, arts, animals/nature, local history, etc.

2014 Summer Reading Camp Data Collection

(Note: It is anticipated this form will be available for districts to submit online.)

District Contact:
Contact Phone:
Contact Email:
Camp Sites: (List sites of camp sites in district)
Total Number of Students Expected to be Served:
Dates of Camp: (Start/End Dates)
Days of Camp: (Mon-Fri)
Hours Per Day: (Hours of Daily Operation)
Hours of Instruction Per Day: (Hours of Actual Daily Instruction)
Estimated Student/Classroom Teacher Ratio: (Ratio of students to classroom teacher)
Media Center Available: (Yes/No)
Computer Access for Students: (Yes/No)
Camp Schedule: (Provide schedule for an expected week of instruction)
Partnerships for Camps: (List partnerships for each site and what role the partner will play)

List Main Reading Intervention Program(s):

List Primary Instructional Reading Materials:

List Progress Monitoring Tools:

Plan for evaluating individual student performance:

Student data will be collected as a result of the summer reading camps. Districts will flag students in PowerSchool as participants in the district reading camp. Data points in PowerSchool will indicate the 2013 Reading PASS level of the student, the pre/post

Draft

assessment data and whether student was promoted to next grade level. Instructions will be provided to school districts on the method to record the information.

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Summary of trip to Regional Educational Laboratory (REL) at Florida State University

On October 24-25, Dr. Rainey Knight and Dana Yow, EOC staff, travelled to Tallahassee, Florida to learn how Florida officials have implemented reading policies for over a decade. An emphasis on literacy and quality reading instruction is embedded in the culture of Florida public schools and is no longer questioned. Despite political pressures, a lack of leadership devoted to reading at the top levels of state government, and a scarcity of funding (compared to previous years), teachers in Florida we met with are bolstered by the progress being made by their students and how their training helps them assist students to be successful.

Primarily, our time in Florida was spent with Kevin Smith of the REL Southeast and formerly Deputy Director of Just Read Florida!; Barbara Foorman, Director of the Florida Center for Reading Research (FCRR); Bev Simpkins of FCRR; and Laurie Lee, from Just Read Florida! We also met with administrative leaders and teachers at two schools: Sabal Palm Elementary School, a Title 1 school in Leon County School District designated as one of the 100 lowest performing Florida schools in reading as well as the Florida State University School, a K-12 Charter School in Tallahassee.

"The most powerful common denominator in education"

In 2001, Florida Governor Jeb Bush established Just Read, Florida! to ensure all Florida students would be able to read at or above grade level by the year 2012. Bush recognized reading as "the most powerful common denominator in education and paramount to an individual's success." Since that time, a number of statewide policies have been implemented in Florida to maintain the former Governor's commitment to high reading achievement creating a comprehensive and systemic approach to reading that involve key, systemic components:

1. A focus on supporting advanced literacy and intervention early, preventing the literacy achievement gap from starting;
2. enhanced pre-service and in-service training in literacy at the teacher and administrator level;
3. an end to social promotion of students who read far below grade level in third grade and a commitment to explicit, comprehensive, intensive, and supportive instruction of students at risk for reading failure;
4. sustained intervention aligned with district plans; and
5. an emphasis on data-driven decision making and a statewide structure committed to reading.

Focus on supporting advanced literacy and intervention early, preventing the literacy achievement gap from starting

As is emphasized in the Florida Dept. of Education Statewide Literacy Plan, "it is easier to prevent literacy achievement gaps from starting during the early literacy years than it is to close achievement gaps once they have emerged."

Focus on the family before kindergarten

Florida officials learned lessons in the area of early literacy from Kennewick School District in Washington. The district's Reading Success Model set a goal of 90 percent of their students reading on grade level. After safety, reading proficiency was established at their highest priority for students. In Kennewick, the single most cost effective thing they tried to do in the district was change the

Incentive for Pre-K programs to have children ready for Kindergarten

The Florida Department of Education/State Board of Education is required by law to calculate a kindergarten readiness rate every year for each private or public school VPK Provider of either the School-Year (540-hour) or Summer (300-hour) program.

The **VPK Provider Kindergarten Readiness Rate** measures how well a VPK provider prepares four-year-olds to be ready for kindergarten based upon the Florida Early Learning and Developmental Standards for Four-Year Olds (2011). The VPK Standards describe what four-year-old children should know and be able to do by the end of their prekindergarten year. The VPK Provider Kindergarten Readiness Rate is based on the screening results of children who attended and completed VPK. The screening is administered by public and private schools. For the 2012-13 kindergarten screening, the FLKRS included a subset of the Early Childhood Observation System (ECHOS™) and, two measures from the Florida Assessments for Instruction in Reading (FAIR), Letter Naming and Phonemic Awareness that provide a probability of reading success score. Readiness for Kindergarten has been determined to be the following: ECHOS™ scores: Consistently Demonstrating or Emerging/Progressing and FAIR score: Probability of reading success score at or above 67 percent. The percent of children ready for kindergarten on both measures is calculated by dividing the number of children substantially completing the program who score ready on both measures by the number of children substantially completing the program and screened on both measures.

A Provider on Probation is a VPK provider whose readiness rate is at or below the minimum set by the State Board of Education. Providers on Probation are required to submit and implement an improvement plan. A Provider on Probation cannot begin instruction for a new VPK class or program and will not receive funding for VPK until an Improvement Plan has been submitted and approved.

https://vpk.fldoe.org/

perception of parents by focusing on one question: how would entering kindergarten knowing very few basic skills affect a child's success in school? The majority of parents in Kennewick, no different from other locales, believe their child will catch up within a year or two. Once in public schools, however, most students make *annual* growth. Educators in Kennewick knew that catch-up growth was very difficult to achieve. "It can be a product only of quality of instruction in great quantity." When students leave kindergarten three years behind in reading, they must make six years of growth in three years to catch up by third grade. That is two years of growth in each first, second, and third grades to catch up. If the majority of students could enter kindergarten with grade level language and literacy skills, schools would only need to create annual growth.

In Kennewick, 22,000 parents were served by 2009 with Ready for Kindergarten programs, which were developed through a partnership with local, community-based Children's Reading Foundations. Seventy-eight percent of students whose parents attended entered with at or above level grade level skills.[1]

Voluntary Pre-K

School readiness is promoted statewide as Florida currently enrolls 70% of the 4-year-olds in Florida in a Voluntary Pre-Kindergarten Program (VPK) in approximately 6,000 private and public providers. Eighty percent of the programs are private providers. The state funds a four hour per day program. Students can be served longer but the state does not provide the funding past the four hours per day.

1 Lynn Fielding, "The Kennwick Model: Annual Growth, Catch-up Growth" (presentation, May 2009).

Mandatory Readiness Assessment

Florida statute requires that a statewide kindergarten readiness screening be administered within the first days of kindergarten in all public schools; the screening assessment is mandatory. The Florida Kindergarten Readiness Screening (FLKRS) is designed to gather information on a child's overall development and to "specifically address the readiness of each student for kindergarten based on the VPK Education Standards.[2] All Pre-K programs have to administer FLKRS three times a year and it measures language development, early math, and early sounds.

> "It is common to find within a kindergarten classroom a five-year range of children's literacy-related skills…(some) may have skills characteristic of the typical three-year-old, while others might be functioning on the level of they typical eight-year-old." – *Dr. Jeni Riley, University of London as quoted in a joint position statement of the NAEYC and IRA.*

Enhanced pre-service and in-service training in literacy at the teacher and administrator level

Before the implementation of the third grade retention policy, Florida had made significant systemic changes to better equip teachers for the level of intervention required to help students in danger of reading failure. Multiple tiers of reading intervention, along with daily core reading instruction, are required to help these students succeed. Measures were put in place to make certain that pre-service teachers were provided with adequate literacy instruction and that teachers in the classroom were provided adequate professional development.

K-12 Reading Endorsement

In 2001, Florida created a K-12 reading endorsement for teachers. The endorsement, or K-12 Certification in Reading, is required for secondary teachers who teach reading and for reading coaches. The standards set forth in the competencies, focus on strategic instruction that support student achievement in reading, and are currently incorporated into all teacher preparation programs in Florida. In 2011, the endorsement was "re-framed" to include a greater emphasis on oral language.

Florida K-12 Reading Endorsement Requirements	
Reading Endorsement Competency (courses)	**In-service hours required**
Foundations of Reading Instruction	60
Application of Research-Based Instructional Practices	60
Foundations of Assessment	60
Foundations and Applications of Differentiated Instruction	60
Demonstration of Accomplishment (practicum)	60

2 Florida Department of Education State Literacy Plan, 2011-2012, Accessed September 11, 2012. http://www.justreadflorida.com/pdf/StrivingReaders.pdf.

Professional Development

Teachers in grades 6-12 are currently required to become proficient in applying scientifically-based reading strategies through their content areas. The professional development in Florida is known as Content Area Reading Professional Development (CAR-PD) and Next Generation Content Area Professional Development (NGCAR-PD). Teachers who are not certified in reading or endorsed in reading must complete one of the two professional development packages if they provide reading intervention to Level 2 students who do not need instruction in decoding or text reading efficiency in content area classes. Although neither professional development package fulfills the requirements for the Reading Endorsement, both require 60 hours of face-to-face professional development as well as a 30 hour practicum. NGCAR-PD is a train-the-trainer model and according to the teachers at the Florida State Laboratory School, the professional development focuses on vocabulary and comprehension.

An end to social promotion of students who read far below grade level in third grade and a commitment to *explicit, comprehensive, intensive*, and *supportive* instruction of students at risk for reading failure

Florida students are eligible to be retained in third grade if they score a Level 1 (of five performance levels) on the FCAT Reading Achievement Test. As specified by statute, students qualifying for retention can be promoted if they qualify for one of six "good cause exemptions." The exemptions include:

- students with disabilities whose Individual Education Plans (IEPs) indicate that the state test is not an appropriate measure of performance;
- students with disabilities who were retained twice previously in third grade; Limited English Proficiency (LEP) students;
- students retrained twice previously; and
- students who can demonstrate proficiency through an alternative assessment or portfolio of their work.

According to documents received in Florida, in school year 2003-04, 45,577 students (20% of test takers) scored Level 1 on the FCAT. Of those students, 22,411 were not retained because of good cause exemptions. A total of 23,166 students (10% of test takers) were retained. By contrast, in school year 2011-12, 35,860 students (16% of test takers) scored Level 1 on the FCAT. Seven percent of students were retained in the same grade at the end of the school that year.

Retention at Sabal Palm Elementary

Sabal Palm Elementary handles retained students in a 3rd-4th transition class ("transitional instructional setting" allowed by state statute.) Currently, the class size is about 14 students. They teach the students using 4th grade content. However, the students receive daily reading intervention. Intervention involves the components of reading instruction used with all students: phonemic awareness and phonemic decoding skills; fluency in word recognition and text processing; construction of meaning; vocabulary; spelling; and writing. Students who need intervention because they are at risk of reading failure need the same instruction that is more explicit, comprehensive, intensive, and supportive in small-group or using individual instruction.

Sustained interventions aligned with District Plans

Districts must write a K-12 Comprehensive Research-Based Reading Plan each year outlining how they plan to spend their allocated funds. Some of the interventions include:

Literacy Coaches

Districts can choose to hire literacy coaches for schools determined to have the greatest need based on student performance data; experience and expertise of the school's administration and faculty in reading assessment, instruction and intervention; and receptiveness of administration and faculty to the coaching model. Reading/Literacy coaches are required to be endorsed or K-12 certified in the area of reading, or working toward that status by completing a minimum of two reading endorsement competencies of 60 in-service hours each or 6 semester hours of college coursework in reading per year. All schools utilizing a reading/literacy coach must implement the reading/literacy coach model developed by Just Read Florida! Officials in Florida are trying to get an instructional coach endorsement but they have been meeting resistance.

Summer reading academies

The majority of Florida school districts choose to offer summer reading camps/academies for students who score at Level 1 on FCAT Reading. Districts are required to submit a plan to the Just Read! office prior to implementation.

At Sabal Palm Elementary, the summer academy runs four days a week for five weeks at five hours per day. Although they try to make the academies fun and interesting, they were described as largely "skills-based and fast-paced." Currently, Sabal Palm focuses summer academies on first and third graders. First graders are those students who have been identified as having an issue early that is holding them back from making progress. Students in third grade are most likely in the summer academy to avoid retention. For a third grader to be promoted to fourth grade, they can either earn a passing grade on a reading portfolio (a series of assessments) or pass the SAT-10. Students in the Sabal Palm Summer Academy receive at least two lessons per day. They rely heavily on technology, using SuccessMaker and regular benchmark testing.

Leon County School District has five summer sites fed into by 24 schools. They employ 50 teachers for the district's summer academies, all hand-picked by the district. They also employ paraprofessionals and interns from colleges and universities. If summer academies are at Title 1 schools, district can use Title 1 money to pay for the academies.

Lesson study and state-level professional development

Lesson study is a form of professional development that is designed to assist schools in developing capacity. It is job-embedded and brings teachers together in a team approach focused on formulating lessons that focus on how students think and learn. The state also provides professional development, many of which are online, for many different audiences focused on literacy. Two resources, the FAIR Student Center Activities Search Tool, and the Literacy Essentials and Reading Network (LEaRN) provide teachers with examples of activities and videos they can access to support learning in literacy. Both resources were created by The Just Read! Office and the Florida Center for Reading Research.

Emphasis on data-driven decision making and a statewide structure devoted to reading

Monitoring and improving reading instruction is something that happens at the system, district, school, and classroom level in Florida. A Reading Leadership Team works within each school to analyze data which drives decisions and appropriate research-based instructional materials and strategies used to address individual student needs. This team also works on the district reading plan. At the FSU lab school, the leadership team encourages teachers to read for pleaseure and model how reading instruction should occur.

In 2002, Just Read, Florida! and the Florida Center for Reading Research created a web-based data management system that focuses on the reporting of student progress in reading. The Progress Monitoring & Reporting Network (PMRN) produces data reports at the class, school, district, and state levels on FAIR and other assessments.

In 2009, Just Read, Florida! and the Florida Center for Reading Research created the Florida Assessments for Instruction in Reading (FAIR) and make these available to schools and districts for free. Ninety percent of districts in Florida use FAIR, and the data is available on PMRN. FAIR was created as a replacement for DIBBELS since DIBBELS does not have a comprehension component.

Leon County Schools, where Sabal Palm Elementary is located, does not use FAIR. Grade level teachers do their own progress monitoring every 10 days using aimsweb, a Pearson product which assesses reading fluency up to 8th grade. District officials said that they chose aimsweb because it offered national norms and was easy to use. Children in Grades K-3 are assessed using aimsweb three times a year. Students in grades 4 and 5 are only monitored if they are receiving intervention.

State funding for reading

Florida currently invests **$130 million in statewide funding just for reading**. School districts receive funding based on a per-pupil formula but there is a minimum allocation of $100,000 per district. It is important to note that Florida's public school population is *three times* the size of South Carolina's student population. EIA funds in South Carolina expended for students at risk for school failure totals $136 million.

Sabal Palm Elementary

- Sabal Palm Elementary School is a Title I school in Leon County School District, considered a mid-size district in Florida with 34,000 students.
- Sabal Palm is also one of the lowest 100 performing FL schools in reading.
- The principal Ray King, in his first year at the school, has a reputation for turning schools around using innovative techniques.
- Ray King believes coaching teachers as well as modeling are critical. Also feels it is imperative that teachers feel valued and they are confident they can help bring about success for all students.
- Reading/literacy coaches at Sabal Palm teach 3 periods a day and coach the remaining 3 periods.
- In Leon County Schools, Title 1 schools have full-time reading coaches; non-Title 1 schools have half-time coaches.
- King also uses Exceptional Education teachers, or Special Education teachers, to help students struggling to read. If a child hits below the 30th percentile, they get reading intervention with an Exceptional Education teacher. If there is room for a student in a small group of literacy instruction, he plugs them in.
- He also "repurposes" paraprofessionals in his schools who have proven to have success connecting with children and motivating them to read. He refers to it as an "all hands on deck" approach.
- The school is heavily committed to Accelerated Reader and STAR, which links up to AR and assesses vocabulary and comprehension. STAR assessment is given four times a year. They also use SuccessMaker for Reading and Math in K-8. Waterford is used in PK. Achieve 3000 is used at the middle and high school levels

Florida State University School

- At FSU School, they use a reading strength coach who pulls students out to work with them on raising reading skills.
- They only had 2 children in the summer academy this summer and they rarely have to retain.
- Class size limits in FL: 18 student cap in K-3rd grade; 22 student cap in 4th-8th grade
- They want students to be literacy experts in whatever subject they are learning.
- Guided reading is not enough with low-level readers; Level 1 readers are in Intensive reading classes.

Development of Teacher Training/Higher Education Plan

Dr. Tony Johnson, former Dean of the College of Education at the Citadel, has been working with the EOC to create a plan for the in-service and pre-service training and professional development of teachers and other school personnel. The current legislation outlines guidelines for additional coursework and add-on endorsements.

On November 12, the EOC hosted a meeting of reading faculty and deans representing 18 postsecondary institutions to begin discussions on enhancing the pipeline of teachers and better preparing both in-service and pre-service teachers to assist struggling readers. Dr. Johnson's draft proposals involve a high level of cooperation between local school districts and post-secondary teacher preparation programs.

Stakeholders involved:

Ann Aust, North Greenville Univ.
Jennifer Barrett-Mynes, College of Charleston
C.C. Bates, Clemson University
Shirley Carr Bausmith, Francis Marion University
Barbara Gilbert, Lander University
Kathy Headley, Clemson University
Susan Henderson, Coker College
Ashlee Horton, Lander University
Vanessa Lancaster, Morris College
Cheryl Mader, Winthrop University
Kathryn McColskey, North Greenville Univ.
Shelly Meyers, Limestone College
Lisa Midcalf, Bob Jones University
Kavin Ming, Winthrop University
Jennifer Morrison, Newberry College
Lynne Noble, Columbia College
Jennie Rakestraw, Winthrop University
Ginger Riddle, Newberry College
Windy Schweder, University of SC Aiken
Emily Skinner, College of Charleston
Diane Stephens, University of SC
Renarta Tompkins, USC Beaufort
David Virtue, University of SC
Margaret Walworth, Anderson University
Kim Welborn, Southern Wesleyan University

DRAFT # 4

Teacher Preparation in Literacy

For

Pre-service Teacher Candidates and Practicing Professionals

(The Role of Higher Education)

The following proposals assume an effective working partnership between local districts and higher education teacher preparation programs:

Pre-Service Programs

1. Beginning with the 2015—2016 school year all pre-service teacher education programs (including MAT degree programs) require all candidates seeking licensure at the early childhood or elementary level complete a 12 semester credit sequence in literacy that includes a school-based practicum and ensures that candidates grasp the theory, research and practices that support and guide the teaching of reading. The components of the reading process identified by the International Reading Association and those established by the National Board for Professional Teaching Standards provide the focus for this sequence to ensure that all teacher candidates are skilled in diagnosing a child's reading problem and capable of providing an effective intervention.

   Professors Tom Gill of Appalachian State University and Kevin Flanagan of West Chester University continue to use this approach providing undergraduate teacher candidates in early childhood and elementary education programs with the knowledge and skills necessary for assisting all children in becoming effective readers. The ideal is for teacher candidates to enroll as a cohort in two literacy courses (e.g. Foundations of Reading and Assessment and Instructional Interventions in Reading and Language Arts) during the fall semester of their junior year. In partnership with an area school district—preferably one with students experiencing reading difficulties –each course is offered on-site with the first course meeting on Tuesday mornings and the second on Thursday morning at the same location for three hours.

   During the first five weeks of the 15 week semester, the college or university instructor presents literacy as a developmental process demonstrating the basics of literacy instruction with children from the school and modeling assessment techniques and intervention strategies. Emphasis is placed on ensuring that

teacher candidates understand the significant benchmarks of literacy development and how to assist children in becoming effective readers. During the first five weeks of approximately thirty hours of instruction and modeling, teacher candidates learn how to diagnose a child's reading ability. Once teacher candidates are able to identify the child's reading level and his/her reading problem, the focus shifts toward differentiated instruction and using the most appropriate strategy for addressing a particular reading problem. During the remaining ten weeks, teacher candidates are assigned in pairs to tutor a child experiencing reading difficulties under the careful supervision of the college or university instructor. For the remainder of the semester on Tuesday and Thursday mornings, each session is divided into approximately one hour of instruction and modeling by the college or university instructor, one hour devoted to teacher candidates working in pairs with a student on specified tasks, and the final hour debriefing with the college instructor and planning for the next session's activities.

During the spring semester, teacher candidates are placed in the same or similar school setting for a more comprehensive 6 semester credit practicum. Employing a similar format, university or college faculty will continue to model appropriate literacy instruction for teacher candidates. Under the supervision of the college or university instructor, candidates will interact in more substantive ways with students experiencing reading difficulties. During this semester long practicum, teacher candidates are expected to engage in one on one tutoring, instruction of homogenous groups, and using increasingly sophisticated assessments to more effectively determine the needs of groups and individual students.

It is important to note that the 12 semester credit pre-service teacher training requirement in literacy described above integrates the theory, research and practices identified by the International Reading Association and others as necessary for ensuring that all teacher candidates develop the knowledge and skills necessary to assist all children in becoming effective readers. Using this exemplary program as a guide, all literacy teacher preparation programs are to be approved by the Read to Succeed Office to ensure that teacher education candidates possess the necessary knowledge and skills to effectively assist all children in becoming proficient readers.

2. Beginning with the 2015-2016 school year all pre-service teacher education programs (including MAT degree programs) require candidates seeking licensure at the middle or secondary level complete a 6 semester credit sequence in literacy that includes a course in the foundations of literacy and a course in

content area literacy preferably taught by a content area faculty member. These two courses are to include a carefully selected school based practica to ensure that middle and high school teacher candidates understand reading as a developmental process and possess the knowledge and skills to assist struggling readers to more effectively read content material. In addition, student teaching or internship placements are to be carefully assigned to compliment the practica experiences incorporated into these two courses. All middle and secondary teacher preparation programs are to be approved by the Read to Succeed Office to ensure that all teacher candidates possess the necessary knowledge and skills to effectively assist all adolescents in becoming proficient readers. The purpose of the Read to Succeed Office's review of these teacher preparation literacy programs is to ensure that all teacher candidates possess the necessary knowledge and skills to effectively assist all adolescents in becoming proficient readers.

3. While it may be possible in the future for programs to document in different ways that their candidates possess the necessary knowledge and skills to effectively assist all students in becoming proficient readers, our current assessment instruments are not sufficiently sophisticated to ensure that teacher candidates have mastered the necessary competencies. Also, it may be possible to develop add-on literacy licensures at the undergraduate level but doing so will further segregate the have and have-not districts and dilute the statewide impact of this literacy initiative.

Practicing Professionals

To ensure that practicing professionals possess the knowledge and skills necessary to assist all children and adolescents in becoming proficient readers, multiple pathways are needed for developing this capacity.

The preferred path is for extant licensed teachers to enroll in and complete either the master's degree in literacy or the required coursework for the literacy teacher add-on endorsement. To the extent possible the coursework for the degree and/or literacy add-on endorsement are to be provided by higher education institutions (IHE) with nationally recognized (International Reading Association) programs. Currently, four institutions of higher education (Clemson, The Citadel, University of South Carolina –Columbia, and Winthrop University) provide these nationally recognized programs. Since it is not possible for these four institutions to provide the programs necessary for all professional educators to develop the knowledge and skills necessary to assist all children and youth in becoming proficient readers, other institutions—both

public and private—are encouraged to develop masters' level programs in compliance with the standards of the International Reading Association.

More programs are needed to meet the demand for ensuring all professional educators are capable of assisting all children in becoming proficient readers. Until more nationally recognized programs are developed, the IHEs with nationally recognized programs need to partner with area school districts and neighboring higher education programs to deliver the graduate level coursework required for this add-on endorsement and degree. For example, literacy faculty from the College of Charleston could partner with The Citadel in delivering The Citadel's nationally recognized program to professional educators in the Lowcountry. In similar fashion, faculty from Newberry College could assist USC-Columbia in expanding its graduate programs in literacy to districts in the middle of the state. Similar partnerships could be developed between Winthrop and Clemson Universities and other IHEs throughout the state. In collaboration with the Commission on Higher Education and the state Department of Education, the Read to Succeed office is charged with facilitating the development of these partnerships and is responsible for implementing them. In order to effectively impact the quality of literacy instruction throughout the state, tuition assistance for practicing professionals from the state is necessary.

To augment this preferred pathway, school districts, higher education institutions, and the Read to Succeed Office will collaborate in identifying the essential competencies required of all educators to enable all children and youth to become proficient readers. Once these competencies are identified in detail (Florida has taken the lead here), districts—in collaboration with higher education institutions and the Read to Succeed Office--can develop professional development for all professional staff focused on these essentials of instructional literacy.

In fostering a statewide model of professional development for enabling all practicing professionals to develop the essential competencies for effective literacy instruction, the Read to Succeed may consider implementing a modified version of the cohort approach currently employed by the University of South Carolina College of Education.

For this to work, it is necessary for the Read to Succeed office to establish and coordinate a consortium of IHEs and local school districts to offer graduate level literacy courses throughout the state, empowering practicing professionals to assist students of all ages in becoming proficient readers. The syllabi for these graduate offerings are developed by regular or adjunct faculty hired by the IHE granting credit for these courses. The Read to Succeed office is charged with reviewing the credentials of the IHE faculty (typically, a doctorate in literacy or

related field) to ensure that they are capable of overseeing instructors with masters degrees capable of delivering the course content to cohorts of area teachers. The regular or adjunct professors serve as instructors of records for these cohort courses and could supervise multiple cohort sections each semester.

By employing this modified cohort approach along with the more traditional option for obtaining a master's degree or add-on certification in literacy, the Read to Succeed office could enable all practicing teachers to qualify for an add-on literacy teacher or literacy coach licensure and enable school administrators to acquire the necessary literacy competencies for becoming effective instructional leaders.

Whatever model that the Read to Succeed office chooses to embrace, funding to support the necessary professional development is needed. Should the Read to Succeed office embrace the USC model, the contract rate for the on-site courses offered by masters level instructors must be negotiated with the IHE granting the credit. In addition, the Right to Succeed office must collaborate with State Department of Education to ensure that the courses offered meet the requirements for the add-on licensure.

Since practicing professionals are likely to pursue the add-on licensure or literacy degree by enrolling in the professional development coursework offered by IHEs on-site in their district, and by enrolling in the more traditional route of IHE based courses, the Read to Succeed office must creatively pursue multiple ways of supporting practicing professionals. For example, The Citadel in collaboration with area school districts offers its masters' degrees in literacy and leadership to cohorts of teachers selected by the district. The cost of the program is shared equally with the teacher paying a third, the district paying a third, and The Citadel reducing the tuition by a third.

Everyone wins from this arrangement. It is cost effective for the IHE since a cohort of twenty or more students generates more revenue than it costs to provide the courses. The district wins by developing a teacher corps capable of assisting all students in becoming proficient readers, and the practicing professional wins by enhancing their professional skills and credentials.

***For more information about this cohort model, see the documents developed by Dr. Dianne Stephens, the Swearinger Professor of Education at The University of South Carolina.**

For all non-practicum courses, teachers and administrators have the option – subject to availability –of taking web-based courses or taking them at an IHE. Some districts may choose to partner with an IHE and offer the courses on-site in

their districts. Practicums would be conducted at school sites and could involve children enrolled in after–school programs or summer reading camps. As noted earlier, the Read to Succeed Office will work with IHEs and school districts to provide the coursework at a cost effective rate for practicing professionals.

Teacher Qualifications

For

Retained Third grade Students

Third grade students retained must have a reading improvement plan and an assignment with a teacher with at least one year of teaching experience and either an add-on literacy teacher license or demonstrated competency as an effective teacher of literacy.

Recommendations for PK-20 Literacy Initiative

Early Literacy Recommendations

1. Revise state law to include a statewide mandatory readiness assessment for all students entering 5K kindergarten or state-funded, full-day 4K programs (including CDEPP) beginning with 2014-15 school year. The assessment would be given three times throughout a year and would measure language development, early math, and literacy. Regular progress monitoring for literacy will be done for children beginning in 4K. The results of these assessments will be used to determine the readiness of children entering kindergarten for the first time, to inform classroom instruction, and provide useful information to parents. Results will not be used for accountability purposes or teacher evaluation.
2. Establish an Early Provider Readiness Rate compiled from the assessment results of children who attended and completed state-funded 4K programs (including CDEPP). Providers must have readiness rates above the minimum set by the State Board of Education before they are granted provider status. Existing providers whose readiness rate falls below the minimum set by the State Board of Education will be placed on probation and required to submit and implement an improvement plan before receiving future state funding.
3. Require any individual who works with children (birth-preschool) that receives state-administered funds to complete 5 hours or 0.5 Continuing Education Units (CEUs) of approved in-service training and technical assistance in early literacy and language development of children from birth to 5 years old. To be administered by DSS Division of Child Care Services.
   Note: According to Penny Danielson at the SCDE: The TEACH program, designed for early childhood educators who are currently working in the field, in either private centers or district CDEPP classroom, revised their ECD 101 course to update the literacy section to be more comprehensive. Assistant teachers in CDEPP classrooms are required to complete ECD 101.
4. Coordinate within existing initiatives to develop a parent education program for families who have young children from birth to 5 years old that emphasizes essential early literacy skills such as oral language development and print awareness.
5. Establish a statewide Task Force on Early Literacy to create public private partnerships designed to promote higher levels of early literacy in programs and homes. Include representatives from family literacy programs, family service programs, center-based programs, and community organizations (i.e., Head Start, DSS, SCDE, First Steps, Reach Out and Read, United Way, etc.)
   Note: Good examples include the Washington State Dept. of Early Learning partnership with Reach Out and Read and Massachusetts public-private partnership with IBM.
6. Require school districts to form collaborative teams devoted to serving children ages 0-5 and their families in their own communities. Groups should include local representatives from family literacy programs, family service programs, center-based programs, community organizations, local businesses, and county libraries, etc.

K-12 Recommendations

1. Place qualified reading/literacy coaches in elementary schools based on the percentage of students scoring at the lowest levels of PASS Reading in grade 3. These coaches would provide daily support to classroom teachers, coaching and mentoring them in differentiated instruction and training them to provide intensive literacy intervention to students. Consideration should be given to K-2 schools where students feed into schools where higher levels of students score at the lowest level of PASS in grade 3.
2. Require retention for students who score at the lowest level of PASS ELA during their third grade year, provided they don't qualify for one of four "good cause exemptions" outlined in Read to Succeed legislation. The reading instruction of students during the "reinforcement" year would be intensive, explicit, comprehensive, supportive, and provided daily by teacher who has shown proven effectiveness in teaching reading and who has the literacy teacher endorsement.
3. Require students in middle school scoring Not Met 1 on PASS ELA or any high school student who has not passed HSAP to receive explicit, systematic, and direct literacy instruction from a teacher who has shown proven effectiveness in teaching reading and who has the literacy teacher endorsement during a daily intensive reading course. These students will be frequently progress monitored.
4. Require all school districts complete a K-12 Comprehensive Research-Based Reading Plan annually outlining how they intend to provide intervention to students who struggle in reading.
5. Require all school districts to create a District Literacy Team or consortium of multiple districts whose responsibility is to provide the leadership, support, and guidance in the development and implementation of the District Reading Plan. Each school will have a School Literacy Team and the principal must be a team member.
6. Require districts to offer skills-based summer reading camps/academies for students who score at the lowest level of PASS ELA during their third grade year. Summer academies should be staffed by teachers highly qualified in literacy. Students earning a passing grade on a selected assessment or who earn a passing grade on a reading portfolio (a series of competency-based benchmarks) will be promoted to fourth grade.

Higher Education and Continuing Education for Practicing Professionals

1. *Add-on Literacy Endorsement for pre-service teachers:* Beginning with the 2015-16 school year, mandate that all pre-service teacher education programs (including MAT degree programs) will require all candidates seeking licensure at the early childhood or elementary level complete a 12 semester credit sequence in literacy that includes a school-based practicum and includes courses in theory, research, and practices that guide and support the teaching of reading.
2. *Add-on Literacy Endorsement for pre-service teachers:* Beginning with the 2015-16 school year, mandate that all pre-service teacher education programs (including MAT degree programs) will require all candidates seeking licensure at the middle or secondary level complete a 6 semester credit sequence in literacy that includes a course in the foundations of literacy and a course in content area literacy as well as a school-based practicum experience.

3. Work with CHE and the State Board of Education to relax current regulations that would allow more postsecondary institutions to develop and offer masters' level reading programs in compliance with International Reading Association standards.
4. By the 2018-19 school year, all in-service teachers will be required to have the literacy endorsement, courses which will be part of their re-certification. To accomplish this, a network of school districts and postsecondary institutions will be established to coordinate graduate level literacy coursework throughout the state to be used as in-service professional development for teachers and administrators.

System-wide recommendations

1. Develop coordinated early childhood, K-12, and postsecondary data systems to include a statewide progress monitoring system, to support sustained improvement (i.e., CDEPP child-level data systems should be linked to K-12 longitudinal data systems and when possible, postsecondary data systems)
2. SCETV, in collaboration with other groups and agencies, will create and maintain an online literacy essentials and reading resource bank to support learning in literacy. The online tools will be geared toward audiences in K-12, afterschool programs, child care programs, as well as parents and families. The network can also be used for online professional development offerings for practicing professionals.

EDUCATION OVERSIGHT COMMITTEE

Subcommittee: Public Awareness Subcommittee

Date: February 10, 2014

REPORT/RECOMMENDATION
2012-13 Communications / PR Plan Update

PURPOSE/AUTHORITY
This plan is designed as an ongoing effort to educate various audiences about three main objectives:

1. Enhance understanding and impact of the accountability system by focusing on the 2020 Vision and the goals of student reading proficiency, innovation and college readiness

2. Implement a public engagement plan focused on the 2013 Cyclical Review of the Accountability System

3. Advocate for the utilization of data published on the annual school and district report cards to be used as tools for improvement.

CRITICAL FACTS
This plan has been updated with the status of each of the strategies outlined in the FY 2012-13 Communications Plan. Deliverables and accountability measures have been included for both.

TIMELINE/REVIEW PROCESS
Fiscal year 2012-13
Review: January/February 2014

ECONOMIC IMPACT

Cost:

Fund/Source:
Public Awareness funds

ACTION REQUEST

☐ **For approval** ☒ **For information**

ACTION TAKEN

☐ **Approved** ☐ **Amended**

☐ **Not Approved** ☐ **Action deferred (explain)**

Communications / Public Relations Plan FY 2012-13

Updated January 14, 2014

FY 2012-13 Objectives:

1. Enhance understanding and impact of the accountability system by focusing on the 2020 Vision and the goals of student reading proficiency, innovation and college readiness
2. Implement a public engagement plan focused on the 2013 Cyclical Review of the Accountability System
3. Advocate for the utilization of data published on the annual school and district report cards to be used as tools for improvement.

Audience	Objective / Tactic	Deliverable / Accountability Measures
General Public & Media	1.1. Write and design publication communicating SC's progress toward achieving 2020 Vision	• Printed 3,000 copies of *World Within Our Reach* brochure; sent by mail to key audiences. Remaining copies used for events throughout year
	1.2. Press Event releasing SC's progress toward reaching 2020 Vision	• February 11, 2013 press event held in lobby of SC Statehouse • Eight members of local press corps present at event. • News release and media packet prepared for and distributed to attendees • Coverage of release: ABC Columbia; WLTX Columbia; WACH Fox, WIS-TV; WSPA; WBTW; Sun News; Rock Hill Herald; Charlotte Observer; The State
	1.3. Outdoor Advertising (Mass Media) – focus on reading	• EOC continues to run an outdoor advertising campaign focused on reading for pleasure. The 12 "Kids Who Love Reading Live Happier Ever After" billboards are located in various locations around the state. • Through an arrangement with the Outdoor Advertising Association of SC, the billboard space was donated and the EOC paid for production and installation. • The billboards will remain up until June 17, 2014
	1.4. Update Progress Report on EOC Website	• EOC staff updates website to include information about the status of the 2020 Vision, including links to stakeholder websites. • http://www.eoc.sc.gov/reportsandpublications/2020Vision/Pages/default.aspx

	1.5. Dramatically increase use of social Media	• EOC updates daily established Facebook and Twitter pages. • Began presence on Pinterest focused on innovation. • Started tumblr page (www.sceoc.tumblr.com) using hashtags created for Teacher Appreciation Month in May 2013. • Facebook: 136 likes; Twitter: 741 followers; LinkedIn: 500+ connections; Google+: 16 in our circle; and Pinterest: 51 followers • Hosted Twitter talk on reading following TransformSC innovation summit.
	1.6. Spread the news via radio & TV	• Melanie Barton taped an episode of *Connections*, a public affairs program on SCETV. EOC staff responded to press inquiries via radio throughout the year.
	1.7. Target Education Reporters / Editorial Bd. members/writers	• Hosted conference bridge for the statewide release of school and district report cards. Ten education reporters and editorial board members attended the call. • Barbara Hairfield and Melanie Barton met with *Greenville News* editorial board on August 7, 2013 to discuss reading legislation and EOC Retreat.
	1.8. Reach out to regional business publications (Midlands/Upstate/Low country Biz)	• Sent quarterly *At-A-Glance* to business editors of regional business publications.
	1.9 Develop a poster about 2020 Vision	• Did not print posters; printed reading brochures for wide dissemination.
	1.9.1. SC ETV's "Speaking of Schools" Program	• Radio/podcast segment scheduled for February 2014 on release of 2020 Vision progress
	1.9.2. Work with ETV on development and implementation of innovation PR campaign	• Co-branded EOC and ETV ed news bulletin was distributed electronically to 4,500 recipients. EOC submits information about reports and released to ETV monthly. • Working with ETV on developing web-based literacy essentials and a reading resource bank to support learning in literacy. Project first to focus on 12 school districts piloting reading proficiency plan.
	2.1. Solicit broad public input on the recommendations of	• Fifty-seven individuals attended the three stakeholder meetings in Columbia, Charleston and Greenville with half of the members of the cyclical review panel in attendance along with representatives of the State Board of Education, business and industry, public

	broad-based stakeholder group performing cyclical review of accountability system	education, higher education, parents, and community. • Cyclical review panel composed of 35 individuals.
	3.1.Develop focus briefings on results of school and district report cards	• EOC developed focus briefings related to the results of the school and district report cards, released in November 2013. EOC hosted a conference bridge prior to the release of the results. Participation exceeded capacity as all 25 ports were used. News media, district superintendents, and public information officers participated in the call.
	3.2.Meet with Editorial Boards of SC daily newspapers to discuss results	• Hosted conference bridge for the statewide release of school and district report cards. Ten education reporters and editorial board members attended and participated in the call. • All major news outlets in the state covered release of report cards.
Audience	**Tactic**	**Deliverable / Accountability Measures**
Parents of school-aged Children	1.1 Mobilize school districts	• Printed 3,000 copies of *World Within Our Reach* brochure; sent by mail to key audiences. Remaining copies used for events throughout year, including dissemination to statewide School Improvement Council.
	1.2 Reach out to school boards	• Melanie Barton presented before SC School Boards Association as well as SCASA meeting.
	1.3. Use social media to communicate with parents	• Began re-posting articles of interest to parents of school-age children as well as reading materials and link to family-friendly standards site. • Facebook: 136 likes; Twitter: 741 followers; LinkedIn: 500+ connections; Google+: 16 in our circle; and Pinterest: 51 followers
	1.4 Hold a student video contest focused on innovation	• Middle and high school participated in video contest answering the following question: “How would I change schools to prepare me and my fellow students to be innovative” OR “How is my school already preparing me and my fellow students to be more innovative? • 84 students participated in the contest. Five outside judges chose four winners which were announced in December 2012.

	1.5. Communicate with parents through SC PTA, SIC	• 2020 Vision brochure and information about updated family-friendly standards disseminated to statewide School Improvement Council.
	1.6. Develop and disseminate “Tips for Parents and Families” document focused on summer reading loss.	• Designed and created a brochure to assist non-profit organizations, faith-based, community, county libraries, etc. in ways to volunteer and assist in improving reading proficiency among SC students and reduce summer reading loss. • Printed 50,000 copies of brochure. All have been distributed based on requests from schools and organizations. Staff is maintaining a waiting list for those requesting a second printing.
	1.7. Revise and distribute Family Friendly Standards to reflect new state standards in ELA and Math. Publish 4K Family-Friendly Standards as a tool.	• Worked with SCDE staff to create online family-friendly standards at www.scfriendlystandards.org. The site is updated to include material for the Common Core standards in ELA and Math
	1.8. Update online Family-Friendly Standards tool to include more grades and subject areas	• Worked with SCDE staff to create online family-friendly standards at www.scfriendlystandards.org. The site is updated to include material for the Common Core standards in ELA and Math and includes K-12 content in English and Spanish.
	2.1. Four parents (one of whom is the parent of a child with special needs) to serve on cyclical review stakeholder group.	• Twelve parents served as participants in focus groups in Columbia, Charleston, and Greenville. Three parents served on the cyclical accountability review panel acting in that capacity.
	3.2 Develop online materials for parents on understanding and using the school and district report cards	• Site developed: http://www.eoc.sc.gov/reportsandpublications/2012reportcards/Pages/default.aspx • Regina King working with SC Interactive to ascertain analytics for specific web pages.

Audience	**Tactic**	**Deliverable / Accountability Measures**
Educators	1.1 Posters to schools for staff lounges	• Did not print posters; printed reading brochures for wide dissemination.
	1.2 Draft article for newsletters of all education associations and content organizations in SC	• Provided article and news release on the 2020 Vision to education organizations in the state.
	1.3 Notify schools of 2020 Vision Update	• Superintendents, instructional leaders, and public information officers received 2020 Vision update via mail as well as electronic mail.
	1.4 Send thank you notes to educators	• Placed nine electronic billboard in Columbia and Charleston during the month of May "Teacher Appreciation Month" using private funds.
	1.5 Develop "tips for educators" document focused on innovation.	• Using electronic software, provided *Tips for Education Engagement*, research-based and innovative strategies for engaging students in reading and writing. • Sent to 2,987 recipients. Analytics for each issue: 1. *Motivating Students to Read* (Williamsburg County Magnet School of the Arts): 1,995 visitors (3 arrived via Facebook, 12 accessed outgoing links) 2. *Using Blogs in the Classroom* (Charleston School of the Arts): 713 visitors (12 accessed outgoing links) 3. *Engaging Middle School Students in Reading* (Alcorn Middle School): 1,170 visitors (22 accessed outgoing links) 4. *Using Dogs to Help Motivate Students to Read and Improve Reading Proficiency* (New Providence Elementary School): 1,162 visitors (19 arrived via Facebook; 3 via Twitter; 2 accessed outgoing links)
	1.6 Follow up with Teachers during Teacher Appreciation Week	• Sent out daily messages about appreciating teachers during May. • Started tumblr page (www.sceoc.tumblr.com) using hashtags created for Teacher Appreciation Month in May 2013.
	1.7. Partner with SCDE	• Worked with SCDE staff to create online family-friendly standards at www.scfriendlystandards.org. The site is updated to include material for the Common Core standards in ELA and Math

	2.1. Cyclical review group to include 2012 SC State Teacher of the Year, two members of local school boards, three district superintendents, two school district employees, and two individuals representing post-secondary education.	• Review group included 2012 Cyclical review group included 2012 SC State Teacher of the Year, two members of local school boards, three district superintendents, two school district employees, and two individuals representing post-secondary education.
	3.1.Distribute focus briefings on results of school and district report cards to educators	• All superintendents, instructional leaders, teachers received briefings via email and PIO listserv
Audience	**Tactic**	**Deliverable / Accountability Measures**
Legislators and other Elected Officials	1.1. – Develop one-page printed piece on 2020 Vision	• All members of the General Assembly and legislative staff received the 2020 Vision brochure.
	1.2. E-blast for legislators	• Members of the General Assembly electronically receive quarterly *At-A-Glance* publications
	1.3 Engage EOC members to share information	• EOC members share information with their legislative delegation
	1.4 Provide talking points for legislators	• Members of the General Assembly and legislative staff receive talking points on the report card release, reading, and other issues upon request.

	1.5 Meet with key legislative staffers	• Melanie Barton meets in person and by phone with staff weekly, even daily
	2.1. Cyclical review group to include Governor or her designee, SC State Superintendent of Education, and four legislators	• Review group included SC State Superintendent of Education and two legislators. The Governor did not attend or specify a designee.
	3.1. Distribute "personalized" focus briefings on results of school and district report cards to legislators and legislative staff	• Every member of the General Assembly received a focus briefing on the results of the school and district report cards. This year, legislators received historical ratings information about every school and district in the state.
Audience	**Tactic**	**Deliverable / Accountability Measures**
Business community	1.1. – Engage business community on the importance of the 2020 Vision	• Members and staff participated in two major events organized by TransformSC, an initiative spearheaded by prominent business leaders designed to infuse innovation into the public school system. • Melanie Barton serves on the board of TransformSC
	2.1. Cyclical review group to include ten individuals representing business and industry	• Review group included 11 individuals representing business and industry. Nine business members participated in the three regional focus groups.

SC EDUCATION OVERSIGHT COMMITTEE

Reporting facts. Measuring change. Promoting progress.

M E M O R A N D U M

TO: The Honorable Nikki R. Haley
Members, South Carolina General Assembly
Members, Education Oversight Committee

FROM: Melanie Barton

DATE: January 21, 2014

IN RE: Initial Report on the Child Development Education Pilot Program (CDEPP) Expansion

Pursuant to Provisos 1.83. and 1A.34. of the 2013-14 General Appropriation Act, the Education Oversight Committee (EOC) is hereby providing the initial report of the expansion of the Child Development Education Pilot Program (CDEPP).

The attached is a summary of the findings and recommendations. If you have questions or concerns, please contact me.

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Summary of Findings and Recommendations of CDEPP Report
January 21, 2014

Expansion

At-risk four-year-olds residing in 51 school districts in the state were eligible to participate in CDEPP in Fiscal Year 2013-14 because the General Assembly appropriated $48.8 million or an increase of $26.1 million for the program. Based on the first half of the fiscal year, the expansion of CDEPP in public school districts as administered by the South Carolina Department of Education and in centers as administered by the Office of First Steps to School Readiness will result in an estimated 8,282 at-risk four-year-olds served in Fiscal Year 2013-14. Of the funds appropriated for CDEPP, approximately $7.1 million will not be spent in the current fiscal year.

2013-14 CDEPP (projections)	Public Schools	Private Settings
Number of Providers	47 districts 150 schools	82 Childcare Centers 8 Head Start Centers
Number of Classrooms	391	103
Number of Children	6,981	1,301
% Expenditures on Direct Services to Children	99%	73%
Minimum Projected End-of-Year Surplus	$5,471,579	$1,709,552

As compared to the prior school year in which 5,316 at-risk four-year-olds were served in CDEPP, there will be an additional 2,966 at-risk four-year-olds served in 2013-14. The number of children served in centers approved by the Office of First Steps will double while the number in public schools will increase by 50 percent. The expansion of CDEPP into more urban, suburban, and populated districts that have more childcare centers is one explanation for the significant increase. This data support prior CDEPP evaluations: expansion of CDEPP will require the inclusion of private childcare centers due to the space limitations in public schools.

Approximately one-third at-risk four-year-olds in South Carolina are estimated to be served in a publically funded early education program that includes Head Start, CDEPP and the ABC Voucher Program. Head Start, the ABC Voucher Program and CDEPP serve approximately 68 percent of at-risk four-year-olds living in school districts participating in CDEPP.

Recommendation 1: Unless the General Assembly expands the program to include at-risk four-year-olds living in other school districts in Fiscal Year 2014-15, no additional funds are needed to implement the program in Fiscal Year 2014-15. The school districts of Anderson 3, Lexington 2 and Union could participate in the program with the current appropriation levels as authorized to the Department of Education. Furthermore, current centers participating in the program through the Office of First Steps could experience a 15 percent increase in enrollment and still have enough funds to serve these children at current appropriation levels.

Recommendation 2: The General Assembly should determine how the projected end-of-year surplus funds, which should be at least $7.1 million, should be expended, either for issues related to this program or for other purposes.

Data Quality Issues

While CDEPP is in its eighth year of operation, there continue to be issues of program and data quality including finance and student-level data. While the EOC has begun discussions with individuals responsible for the data management of the program, the issue of whether students receive or have received unique student identifiers upon being enrolled in the program, a requirement of the proviso, continues to be questioned. Students who participate in private CDEPP programs must receive a unique student identifier if the state of South Carolina intends on measuring the academic and social performance of these students over time. Moreover, the central question of how the data management system that the Office of First Steps is implementing, BRIDGES, compares with or is compatible with the data management system that the South Carolina Department of Education is implementing, SLICE, is information that is critical to the future accountability of this program. The issue of two separate data systems for CDEPP should be carefully considered.

Recommendation 3: The South Carolina Department of Education and the Office of First Steps to School Readiness must mutually agree upon how students in this program will be monitored over time and enter into a formal memorandum of agreement that will be a condition of participation by non-public school providers participating in the program. For example, how will children be assessed and for what purpose?

Program Quality Issues

Without having a readiness assessment that is administered to children entering CDEPP as four-year-olds and the same or an aligned readiness assessment that is administered to all children entering kindergarten as five-year-olds, then determining the impact of CDEPP on early literacy, early mathematical ability, and social and emotional development is impossible. Given the existing public information on the centers participating in the program, clearly the quality of educational data on the centers and schools participating in the program, and the quality of educational opportunities could be improved.

Recommendation 4: The EOC has already recommended to the General Assembly that up to $3.0 million in existing funds for the half-day EIA program funds to implement a readiness assessment for all four-year-olds entering CDEPP, for all four-year-olds enrolled in a half-day four-year-old program in public schools, and for all five-year-olds enrolled in kindergarten beginning in school year 2014-15. The assessment should not be used for state or federal accountability purposes but as a tool to measure the effectiveness of educational programs provided to young children and most importantly, for diagnostic purposes to assist classroom teachers in meeting the individual educational needs of students. This recommendation does not prevent the state from collaborating with other states in creating future readiness assessments.

Recommendation 5: Looking to the future, the state should establish a CDEPP Provider Readiness Rate compiled from the screening results of children who

attended and completed CDEPP in either public or private centers. Providers would have to have a readiness rate above the minimum set by the State Board of Education before they are granted provider status. Existing CDEPP providers whose readiness rate falls below the minimum would be placed on probation and required to submit and implement an improvement plan before participating in the program and receiving future state funds.

Recommendation 6: In the meantime, the EOC recommends that any private childcare center participating in CDEPP must have an ABC rating of B or better in order to participate. In addition, if the Department of Social Services documents that the health, safety or welfare of a four-year-old attending a public school participating in CDEPP is at risk, then the Department should be allowed to immediately revoke the license or approval of the public school to participate in CDEPP.

Academic Performance

According to the academic performance of the first three CDEPP cohorts on the Palmetto Assessment of State Standards (PASS), a greater percentage of students who as four-year-olds participated in CDEPP achieved or exceeded state standards in reading and mathematics as compared to their peers who qualified for free or reduced-price meals under the National School Lunch Program, who resided in the same CDEPP districts, but who did not participate in the four-year-old program. In addition, a greater percentage of students who as four-year-olds participated in CDEPP achieved or exceeded state standards in reading as compared to other students in the state who received subsidized meals. However, in mathematics, the two groups of students performed the same.

2013-14

Expansion of the SC Child Development Education Pilot Program (CDEPP)

Report

SC EDUCATION
OVERSIGHT COMMITTEE

PO Box 11867 | 227 Blatt Building | Columbia SC 29211 | WWW.SCEOC.ORG

Report on the Expansion of the Child Development Education Pilot Program (CDEPP) in Fiscal Year 2013-14

A report from the Education Oversight Committee pursuant to Provisos 1.83. and 1A.34. of the 2013-14 General Appropriation Act.

January 21, 2014

The General Assembly created and funded the Child Development Education Pilot Program (CDEPP) with a budget proviso in Fiscal Year 2006-07. CDEPP provides for a full-day early childhood education for at-risk children who are four-year-olds by September 1. The definition of at-risk is eligibility for the free or reduced-price Federal lunch program and/or Medicaid. Both public schools and private childcare centers licensed by the South Carolina Department of Social Services may participate in the program. The South Carolina Department of Education oversees implementation of CDEPP in public schools while the Office of First Steps to School Readiness oversees implementation by private providers.

Between school years 2006-07 and 2012-13, CDEPP services targeted eligible children residing in the plaintiff and trial districts in the Abbeville equity lawsuit, Abbeville County School District et. al. vs. South Carolina. In Fiscal Year 2013-14, the General Assembly expanded CDEPP to include children who met the same age and socioeconomic criteria and who resided in a district with a poverty index of 75 percent or more. The poverty index is a measure of the percentage of students who are eligible for the free or reduced-price Federal lunch program and/or Medicaid. The CDEPP expansion included 17 eligible school districts that were not original trial and plaintiff districts. The legislature appropriated additional state funds of $26.1 million to provide the educational services to children residing in these districts.

Of the funds appropriated for CDEPP in Fiscal Year 2013-14, the legislature allocated $300,000 to the Education Oversight Committee (EOC) to perform an evaluation of the program. The attached is a preliminary report that:

1. Documents the expansion of CDEPP in Fiscal Year 2013-14. The EOC will provide additional information on the program in July of 2014;

2. Updates the projections for the number of at-risk four-year-olds in each school district and the number of at-risk four-year-olds served in a publicly funded program using available information;

3. Analyzes the results of the 2013 administration of the Palmetto Assessment of State Standards (PASS) and the academic achievement of students who had previously participated in CDEPP; and

4. Proposes a framework for a longitudinal evaluation of the program.

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Table of Contents

Acknowledgements 3

Section I - CDEPP Expansion in Fiscal Year 2013-14 7

Section II - Program Quality Issues 21

Section III - Projections of At-Risk Children Served by District 25

Section IV - PASS Performance of Children Served in CDEPP 31

Section V - Analytical Framework 39

Section VI - Summary of Findings and Recommendations 43

Appendix A-Provisos Governing CDEPP 47

Appendix B-Data Request Letters 53

Appendix C-Early Childhood Allocations to School Districts 57

Appendix D-2013-14 First Steps 4K Classroom Enrollment Chart 61

Appendix E-SC First Steps Expansion Projected Expenditures 65

Appendix F-Providers through SC Department of Education & First Steps 67

Appendix G-Academic Performance of CDEPP Students 75

Appendix H-PASS Performance Over Time 79

Appendix I- Early Childhood Education Stakeholder Meeting Participants, 2013 83

Appendix J-SC CDEPP Analytical Framework 85

Appendix K-SC EOC Letter to Early Childhood Stakeholder with Draft Framework 87

Appendix L-SC CDEPP Conceptual Framework Definitions 89

Appendix M-Map of CDEPP Districts 97

Section I
CDEPP Expansion in Fiscal Year 2013-14

Beginning in school year 2006-07, CDEPP was implemented, providing a full-day prekindergarten program to at-risk four-year-olds in poverty residing in the trial and plaintiff school districts in the Abbeville equity lawsuit, Abbeville County School District et. al. vs. South Carolina. Initially, 37 school districts were eligible to participate in the program. Poverty was defined as eligible or the Federal free- or reduced-price lunch program and/or Medicaid. In the current school year, there remain 34 school districts from the original CDEPP districts. The decline in the number of original trial and plaintiff districts is due to the mergers of several school districts including: (1) Marion 1, 2, and 7 merged to form Marion; and (2) Dillon 1 and Dillon 2 merged to form Dillon 4. Of these 34 school districts, Barnwell 45 is the only district that is not participating in CDEPP and has never participated in the program.

In Fiscal Year 2012-13, there were approximately 5,316 children served in CDEPP according to information provided by the Office of State Budget. Of this number, 4,716 were served in public schools and 600 in centers approved by the Office of First Steps to School Readiness. No program or financial data exist to determine how many four-year-olds were served in non-CDEPP school districts in either half or full-day programs in 2012-13, or how many met the definition of at-risk. Similarly, there are no data documenting how many at-risk four-year-olds were served in private childcare centers in non-CDEPP providers.

In Fiscal Year 2013-14, the General Assembly expanded CDEPP to include all four-year-olds residing in school districts with a poverty index of 75 percent or greater. Provisos 1.83., 1.87., 1A.34., and 118.17. of the 2013-14 General Appropriations Act governed the expansion of CDEPP. The provisos are in Appendix A. There were 17 districts identified as having a poverty index of 75 percent or more and not already eligible to participate in CDEPP. Eligible four-year-olds residing in these districts were eligible to participate in CDEPP.

34 ORIGINAL TRIAL & PLAINTIFF DISTRICTS

Abbeville, Allendale, Bamberg 1, Bamberg 2, Barnwell 19, Barnwell 29, Barnwell 45, Berkeley, Chesterfield, Clarendon 1, Clarendon 2, Clarendon 3, Dillon 3, Dillon 4, Florence 1, Florence 2, Florence 3, Florence 4, Florence 5, Hampton 1, Hampton 2, Jasper, Laurens 55, Laurens 56, Lee, Lexington 4, Marion, Marlboro, McCormick, Orangeburg 3, Orangeburg 4, Orangeburg 5, Saluda, & Williamsburg

17 EXPANSION SCHOOL DISTRICTS
Anderson 3, Calhoun, Cherokee, Chester, Colleton, Darlington, Dorchester 4, Fairfield, Georgetown , Greenwood 51, Lexington 2, Lexington 3, Newberry, Richland 1, Spartanburg 7, Sumter & Union

The General Assembly appropriated a total of $48.8 million for CDEPP in Fiscal Year 2013-14 with 76 percent allocated to the South Carolina Department of Education (SCDE) to serve eligible students enrolled in public schools and 24 percent to the Office of First Steps to School Readiness (OFS) to serve eligible students enrolled in approved private centers. (Table 1)

Table 1

CDEPP Appropriations, FY2013-14

	General Fund Recurring	EIA Recurring	Nonrecurring Revenues*	Total
Department of Education	$14,083,439	$20,240,998	$2,678,000	**$37,002,437**
Office of First Steps	$10,335,864	$0	$1,442,000	**$11,777,864**
Total	$24,419,303	$20,240,998	$4,120,000	**$48,780,301**

* Proviso 118.17 (3.1) allocated $4,120,00 in nonrecurring funds for the expansion districts with 65% of the funds allocated to the Department of Education and 35% to the Office of First Steps to School Readiness.

The FY2013-14 appropriation is a $29 million increase over the prior fiscal year. (Table 2) Of this amount, the General Assembly appropriated an additional $2.9 million in EIA funds for the original CDEPP districts and an additional $26.1 million for the expansion of services to new districts.

Table 2

CDEPP Appropriations for FY2012-13 and FY2013-14

Fiscal Year	Department of Education	Office of First Steps	Total
2012-13	$17,300,000	$2,484,628	$19,784,628
2013-14	$37,002,437	$11,777,864	$48,780,301

On October 25, 2013, the Executive Director of the EOC met with the Executive Director and Chief Program Officer at the Office of First Steps to School Readiness to discuss the data needs of the CDEPP evaluation and timelines for submission of the data. On October 30, 2013, the Executive Director of the EOC met with staff from the South Carolina Department of Education (SCDE), including individuals from the Office of Finance and the Office of Instructional Practices and Evaluations, to discuss data needs and timelines as well. Copies of the letters and data request are included in Appendix B.

After two extensions were provided to both SCDE and OFS, the EOC received sufficient information to complete this report from SCDE on December 19, 2013 and from OFS on December 20, 2013. The EOC received information from the South Carolina Department of Education in a timely manner to meet the original January 15, 2014 deadline for publishing this report but not from the Office of First Steps. Consequently, the publication date was delayed from January 15 to January 21, 2014.

A. CDEPP as Administered by the South Carolina Department of Education and Public School Districts

Of the 17 school districts that were eligible to participate in CDEPP in 2013-14 for the first time, 14 actually chose to participate. The school districts of Anderson 3, Lexington 2, and Union chose not to participate in school year 2013-14. The EOC staff contacted the superintendents of Anderson 3, Lexington 2, and Union County School District to understand the reasons why the districts did not participate in the expansion. Their explanations follow:

Dr. Gary Mason, Superintendent of Anderson 3 wrote on January 8, 2014:

"Currently we serve our four-year-olds at each elementary school in half day programs, AM and PM classes. At Starr Elementary we have a modified class that accommodates the needs of children serving 3 and 4 year-olds with disabilities and with students without disabilities. Starr Elementary also houses two Head Start classrooms. Flat Rock Elementary and Iva Elementary both serve only four-year-olds and have AM and PM classes. We were and are considering participating in CDEPP this and next school year. In the initial year of CDEPP we opted not to participate until we have adequate space, personnel, understanding of the funding and how the CDEPP funding will impact the current budget, and to get DSS approval for classrooms and playgrounds that would allow these programs to begin at each location under the proper licensing."

Dr. Venus Holland, Superintendent of Lexington School District Two wrote on December 17, 2013:

"We were extremely disappointed that Lexington School District Two was unable to participate in the 2013 CDEPP Expansion model due largely in part to the timing of the announcement as well as lack of space to add programs. Additionally, at the time of the announcement, most of our seven half day programs were at capacity, serving a total of 280 children.

We had one school with one classroom that would have enabled us to add a class; however, another obstacle we encountered in our efforts to add a CDEPP class was that the expansion did not allow for one site to host a full day and half day model under one roof. In good conscience, since our programs were basically at capacity at this site

Dr. Venus Holland, Superintendent of Lexington School District Two wrote on December 17, 2013: (Cont.)

at the time of the announcement, and could serve 120 half day students, we were not going to call 60 of the 120 students who were prepared to come to school in August and tell them they could no longer attend school had we opted to go with three full day classes at that site.

After several discussions with Penny Danielson at the State Department of Education, we finally concluded that we were simply not going to be able to add a CDEPP class for SY 13/14. To this end, our Early Childhood Coordinator, Rhonda Wiley, did work alongside Jim Riddle from First Steps, and we partnered with childcare facilities within Lexington School District Two, Brookland Academy Child Development Center and La Petite Academy, to serve approximately 20 students on our waiting list.

Lexington District Two's Early Childhood Coordinator has used the Fall SY 13/14 to study ways in which we might be able to participate in the CDEPP expansion should funding exist for SY 14/15. A formal proposal will be submitted to the Board of Trustees during the budget process."

Dr. Kristi Woodall, Superintendent of the Union County School District wrote on December 20, 2013:

"The rationale for declining the CDEPP program funding was rooted in Union County Schools' high level of dependence on State funding and the continuing effects of the devastating losses of funding during the period from 2008-2009 through 2010-2011.

As a result of those funding losses we requested and were approved to operate our 4K programs with Title I funding. We have five elementary schools. All of these elementary schools are Title I schools and we offer 4K to the students served by each. This allowed us to "flex" the 4K lottery funding to mitigate the losses in other State funds upon which we are so dependent. Our local funding, General Fund, has also been very slow to recover from local industry and property value losses.

When we attended the CDEPP information meeting, we learned that the CDEPP funding was not "new" or additional funding. It was clearly stated that if we participated in CDEPP, then the funds would be pulled from our current 4K Lottery allocation. We could not afford to lose that flexibility eligible funding.

However, the overwhelming factor in our decision was that in order to participate in CDEPP and add the one (1) 4K class that we could justify with enrollment and accommodate in our existing facilities, we would have to pull our existing 4K programs out of Title I to prevent supplanting the Federal funds. Unlike some of our neighboring districts, we absolutely could not and cannot afford to absorb our existing 4K programs into our General Fund to offset the costs not covered by 4K Lottery or CDEPP funding."

Consequently, of the 51 school districts eligible to participate in CDEPP in 2013-14, 47 actually participated in 2013-14. (Table 3)

Table 3

Districts Eligible to Participate in CDEPP, 2013-14

	Original Trial & Plaintiff Districts	Expansion Districts
1	Abbeville	Anderson 3
2	Allendale	Calhoun
3	Bamberg 1	Cherokee
4	Bamberg 2	Chester
5	Barnwell 19	Colleton
6	Barnwell 29	Darlington
7	Barnwell 45	Dorchester 4
8	Berkeley	Fairfield
9	Chesterfield	Georgetown
10	Clarendon 1	Greenwood 51
11	Clarendon 2	Lexington 2
12	Clarendon 3	Lexington 3
13	Dillon 3	Newberry
14	Dillon 4	Richland 1
15	Florence 1	Spartanburg 7
16	Florence 2	Sumter
17	Florence 3	Union
18	Florence 4	
19	Florence 5	
20	Hampton 1	
21	Hampton 2	
22	Jasper	
23	Laurens 55	
24	Laurens 56	
25	Lee	
26	Lexington 4	
27	Marion	
28	Marlboro	
29	McCormick	
30	Orangeburg 3	
31	Orangeburg 4	
32	Orangeburg 5	
33	Saluda	
34	Williamsburg	

Note: Shaded districts opted not to participate. Barnwell 45 has never participated in CDEPP

Within these districts, Table 4 documents the number of public schools and classrooms participating in CDEPP in 2013-14 by school district.

Table 4
CDEPP Public Schools and Classrooms by District, SCDE

Participating Districts	Number of Public Schools	Number of Classrooms
Trial & Plaintiff Districts:		
Abbeville	4	5
Allendale	2	3
Bamberg 1	1	2
Bamberg 2	1	2
Barnwell 19	1	2
Barnwell 29	1	1
Berkeley	16	43
Chesterfield	2	4
Clarendon 1	1	3
Clarendon 2	1	6
Clarendon 3	1	2
Dillon 3	1	5
Dillon 4	4	9
Florence 1	6	30
Florence 2	1	4
Florence 3	6	9
Florence 4	1	2
Florence 5	1	2
Hampton 1	2	5
Hampton 2	1	2
Jasper	2	10
Laurens 55	6	15
Laurens 56	1	7
Lee	3	5
Lexington 4	1	24
Marion	3	12
Marlboro	1	3
McCormick	1	1
Orangeburg 3	4	9
Orangeburg 4	3	10
Orangeburg 5	8	23
Saluda	2	3
Williamsburg	5	10
Subtotal:	**94**	**273**
Expansion Districts:		
Calhoun	2	5
Cherokee	5	8
Chester	4	10
Colleton	4	13
Darlington	4	7

Participating Districts	Number of Public Schools	Number of Classrooms
Dorchester 4	3	6
Fairfield	5	9
Georgetown	5	10
Greenwood 51	1	2
Lexington 3	1	5
Newberry	4	4
Richland 1	8	15
Spartanburg 7	3	14
Sumter	8	10
Subtotal:	**57**	**118**
TOTAL:	**151**	**391**

The Department also reported on the curriculum used in each CDEPP school. (Table 5) Seventy-eight (78) percent of schools used Creative Curriculum only or Creative Curriculum along with one or more other curriculum.

Table 5
Curriculum(a) Used by Public Schools, SCDE

Curriculum/(a)	Number of Schools
Creative Curriculum	91
Creative Curriculum/High Scope	1
Creative Curriculum/Montessori	3
Creative Curriculum/Opening a World of Learning	7
Creative Curriculum/Opening a World of Learning/We Discover Math	16
HighScope	17
HighScope/ Opening a World of Learning	1
Montessori	3
Montesoori/Opening a World of Learning	1
Opening a World of Learning	9
Success for All	1
Undocumented	1
TOTAL:	**151**

In these 151 schools and 391 classrooms, the South Carolina Department of Education projects that 6,981 students will be served in CDEPP in School Year 2013-14. (Table 6) These estimates are based solely on the initial allocation of funds to school districts. For the current school year, the General Assembly authorized $4,218 per child for the cost of educational services. Grant funds for materials and equipment in new classrooms were allocated based on the following formula: $1,000 per child or a maximum of $10,000 per classroom. In addition, the Department of Education projects that approximately $600,000 will be transferred to the Office of Transportation for the

provision of transportation for four-year-olds served in CDEPP when the 135-day average daily membership count is finalized. Finally, of the total funds appropriated for the program, $300,000 was directed to the EOC for the evaluation of the program. Of this amount, $195,000 or 65 percent came from the Department's CDEPP appropriation.

Table 6

Projected Expenditures and Services, SCDE

	Educational Services	Materials & Equipment Grants	**TOTAL**
Projected Expenditures:			
Trial & Plaintiff Districts	$19,407,018	$0	$19,407,018
Expansion Districts	$10,038840	$1,190,000	$11,228,840
Transportation			$600,000
Portion of Evaluation (EOC)			$195,000
Professional Development			$100,000
Total:			**$31,530,858**
Projected Services:			
Children Served in:			
Trial & Plaintiff Districts	4,601		
Expansion Districts	2,380		
Children Transported	3,243		

In summary, approximately 93 percent of the projected expenditures of CDEPP as administered by SCDE will be for direct educational services to students. (Table 7) Transportation and materials and grants comprise another 6 percent.

Table 7

Summary of Projected Expenditures, SCDE

Category	**% of Projected Expenditures**
Educational Services	**93%**
Materials & Grants	**4%**
Transportation	**2%**
Evaluation	**0.6%**
Professional Development	**0.3%**
Total Appropriations	**$37,002,437**
Total Projected Expenditures	**$31,530,858**
Projected Balance	**$5,471,579**

In comparing appropriations versus projected expenditures, as of December 19, 2013 the South Carolina Department of Education has a projected balance of unobligated funds of $5,471,579. According to the Department, the Office of First Steps has not requested any additional funds pursuant to proviso 1.87., which is below.

> **1.87.** (SDE: CDEPP Expansion) If by October first, First Steps or the Department of Education determine they will not expend the full amount of the CDEPP expansion funds allocated to each they are permitted to transfer any unspent funds to the other, provided that they will be used for expansion. First Steps and the Department of Education must report to the Chairman of the Senate Finance Committee and the Chairman of the House Ways and Means Committee no later than February 1st how many additional 4K programs have opened and how many additional students have been served. A public school district receiving funds pursuant to the provisions of the CDEPP expansion cannot build or add additional space, to include the addition of mobile units and also to include displacing currently enrolled students out of their current classrooms or schools, to accommodate students in a new 4-K program.

Appendix C provides allocations by school districts for CDEPP as well as for the half-day four-year-old program. Five of the original trial and plaintiff districts and eight of the expansion districts also received EIA funds to provide half-day four-year-old programs in some schools. A school in a CDEPP-eligible district must choose to either participate in CDEPP or may offer instead a half-day four-year-old program but not both. Therefore, a CDEPP district that receives EIA appropriations for half-day four-year-old programs has at least one school that is not participating in CDEPP.

Regarding student data, the EOC received no individual student data documenting the number of students enrolled by district or by school. Although the 45-day ADM counts had been finalized by December 19, 2013, the Department was still in the process of verifying each student who was eligible for CDEPP.

B. CDEPP as Administered by Office of First Steps

Appendices D and E are the actual data provided by the Office of First Steps to document the provision of CDEPP services and projected expenditure of funds in Fiscal Year 2013-14. The Office of First Steps also did not provide any student level data.

First, there are 92 rather than 94 providers. The centers listed on Appendix D were incorrectly numbered. In addition, two of the centers, Progressive Learning Academy and Mary's Little Lamb closed on December 13, 2013 and December 17, 2013, respectfully, as documented by the Department of Social Services. The owner of Mary's Little Lamb sold the business, which has reopened at the same address as Building Blocks Academy. The website of the Office of First Steps does not list Building Blocks Academy as an approved CDEPP provider.

Therefore, after deleting these two providers from the data, Table 8 summarizes the expansion of CDEPP in private childcare centers and Head Start Centers. Approximately, 44 percent of the 1,301 four-year-olds are served in centers located in the expansion districts. Not having individual student data prevents the EOC from determining in which district the children actually reside. Eligibility is determined according to the eligible child's residence. Approximately 170 children, or 13 percent, are being served by Head Start providers.

Table 8

Projected Services by CDEPP in Private Settings

Number of:	Original Trial & Plaintiff Districts	Expansion Districts	Total
Total Providers	45	45	90
New Providers	12	45	57
Number of Classrooms	53	50	103
Number of Children	727	574	1,301
Number of Children Transported	284	87	371

Based on Appendix E, the Office of First Steps anticipates a $1.7 million balance in the program at the end of the fiscal year. The Office of First Steps anticipates a 15 percent increase in the number of providers and children served between December 20, 2013 and the end of the school year. However, upon analyzing the financial data, the projections do not project a 15 percent increase in costs but instead a 30 percent increase in costs. Increasing from 1,301 children served as of December 20 to 1,509 children by the end of the year may represent a 15 percent increase in the number

served but not in total costs because providers will not be compensated $4,218 per student for six-months of instruction, but instead at best half or $2,109 per student. The financial data also do not reflect $105,000 in CDEPP appropriations that were transferred to the EOC for this evaluation.

In comparing the financial data with the actual 2013-14 General Appropriation Act, there are additional questions. First, the General Assembly authorized three new positions for the Office of First Steps specifically for the administration of CDEPP. These personnel costs are not reflected in Appendix E. If OFS has decided not to use those funds to hire individuals but instead to purchase services, then the budget should be amended for Fiscal Year 2014-15.

	TOTAL FUNDS	**GENERAL FUNDS**
D. CHILD DEVELOPMENT		
EDUC PILOT PROGRAM		
PERSONAL SERVICE		
CLASSIFIED POSITIONS	158,000	158,000
	(3.00)	
NEW POSITIONS:		
PROGRAM MANAGER II	*80,000*	*80,000*
	(1.00)	(1.00)
EDUC ASSOCIATE	*130,000*	*130,000*
	(2.00)	(2.00)
TOTAL PERSONAL SRVC	368,000	368,000
	(6.00)	(3.00)
OTHER OPERATING EXP	9,967,864	9,767,864
TOT CHILD DEVELOPMENT		
EDUC PILOT PROGRAM	10,335,864	10,135,864
	(6.00)	(3.00)

Source: 2013-14 General Appropriation Act

The Office of First Steps also projects that it will expend $875,000 of one-time revenues appropriated for the CDEPP expansion for a data management system, BRIDGES. While the EOC cannot determine legislative intent, Proviso 118.17 that governs the expenditure of non-recurring funds for CDEPP is very specific. The funds must be used for the expansion of the CDEPP program. The Office of First Steps did not provide any explanation of the impact of BRIDGES on the expansion of CDEPP services.

Based on the budget information provided by the Office of First Steps, Table 9 documents that 63 percent of the projected expenditures will be expended on direct

educational services while another 10 percent will be expended on materials and grants and transportation. Another 27 percent will be expended on professional development, support, administration, etc., of the program.

Table 9
Estimated Budget, OFS

Category	Projected Expenditures	% Projected Expenditures
Educational Services	**$6,364962**	**63%**
Materials & Grants	**$740,000**	**7%**
Transportation	**$271,600**	**3%**
Professional Development, Training, Technical Assistance, Outreach, Support, and Administration	**$1,816,750**	**18%**
Student Data-Base BRIDGES	**$875,000**	**9%**
Total Expenditures::	**$10,068,312**	
Total Appropriations	$11,777,864	
Projected Balance per OFS:	**$1,709,552**	

The Office of First Steps also provided information on the curriculum used in the centers. Overwhelmingly, the providers used Creative Curriculum. (Table 10)

Table 10
Curriculum(a) Used, OFS

Curriculum	Number of Providers Using
Creative Curriculum	85
High Scope	4
Montessori	1
TOTAL:	**90**

The Office of First Steps also provided information on the education level of the teacher. (Table 11) There were four centers that had two classrooms but information on the education level of only one teacher was provided Approximately, 56 percent of the classroom teachers had a four-year college degree or higher.

Table 11
Education Level of Teacher, Private Centers Classrooms

Highest Level Obtained	**Number of Teachers**
2-Year Degree	35
Pursuing 4-Year Degree	6
4-Year Degree	50
Master's Degree	1
Graduate Degree	7
Unknown	4
TOTAL:	**103**

Summary

1. At-risk four-year-olds residing in 51 school districts in South Carolina were eligible to participate in CDEPP in Fiscal Year 2013-14 because the General Assembly appropriated $26.1 million in additional funds for the program.

2. Based on data provided and available through the first six months of the fiscal year, projected expenditures, the expansion of CDEPP in public school districts as administered by the South Carolina Department of Education and in private settings by the Office of First Steps to School Readiness will result in an estimated 8,282 at-risk four-year-olds served in CDEPP.

2013-14 CDEPP (estimates)	Public Schools	Private Settings
Number of Providers	47 districts 150 schools	82 Childcare Centers 8 Head Start Centers
Number of Classrooms	391	103
Number of Children	6,981	1,301
% Expenditures on Direct Services to Children	99%	73%

3. As compared to the prior school year in which 5,316 at-risk four-year-olds were served in CDEPP, there will be an additional 2,966 at-risk four-year-olds served in 2013-14. The number of children served in centers approved by the Office of First Steps will double while the number in public schools will increase by 50 percent. The expansion of CDEPP into more urban, suburban and populated districts that have more childcare centers is one explanation for the significant increase. This data support prior CDEPP evaluations: expansion of CDEPP will require the inclusion of private childcare centers due to the space limitations in public schools.

4. There continue to be issues related to the quality of the financial and program data provided by the Office of First Steps to the EOC.

5. The EOC received no individual student data from either the South Carolina Department of Education or the Office of First Steps to School Readiness.

Section II
Program Quality Issues

The provisos governing the implementation of CDEPP in public schools and private providers require that "providers shall offer high-quality, center-based programs." The EOC in its prior evaluations of CDEPP focused on the importance of high quality classrooms. The EOC contracted with the University of South Carolina to perform evaluations of individual classrooms and individual students. The data pointed to the fact that there were opportunities to improve the instructional quality of CDEPP classrooms.

The ultimate issue of instructional quality can only be determined if children enrolling in CDEPP as four-year-olds and then enrolling in kindergarten as five-year-olds are assessed using a readiness assessment or assessments that are aligned or are the same. The EOC has recommended to the General Assembly that an assessment or multiple assessments be approved by the State Board of Education for administration beginning in school year 2014-15.

Without having data on individual student readiness, the EOC looked at alternative, existing measures of quality that both public and private providers must meet in order to participate in the program and other measures that are all public information.

For example, all providers must be approved or licensed by the Department of Social Services. The EOC requested from both the Department of Education and the Office of First Steps the licensure status of all providers along with their license number. The data provided was then forwarded to the Division of Early Care and Education at the Department of Social Services to verify the licensure status of all providers. All existing providers have either a regular or provisional license or have been approved. However, there were the following data issues noted:

- The Office of First Steps reported incorrect license numbers for 4 providers and listed two providers as being CDEPP providers who had closed prior to the Office of First Steps submitting data to the EOC.

- The Department of Education reported incorrect license numbers for 17 schools. There are questions about the status of two schools on the Department's list.

Then, comparing the corrected license numbers with the South Carolina Division of Early Care and Education website (http://scchildcare.org/), the numbers of public and private CDEPP providers that have had deficiencies in the past three years were tabulated in Table 12. This information was verified by the South Carolina Department of Social Services on January 10, 2013. Appendix F provides links to the South Carolina Division of Early Care and Education website for each provider. Then the EOC

reviewed the deficiencies to determine which providers had deficiencies related to the following:

- Out-of Ratio Staffing
- Improper Supervision
- Improper Medication Practices
- Fire Code
- CPR/First Aid
- Central Registry
- Fingerprint
- Tracking
- Personnel Behavior
- Unauthorized Caregiver Deficiencies

Such deficiencies were then classified as "significant" as documented in Table 12. The EOC then requested that the Department of Social Services provide the number of providers under corrective action plans, which was also documented below.

Table 12
CDEPP Providers, as of January 13, 2014

	Public Schools	**Private Providers**
Total Number of Providers	149	90
Providers with Deficiencies in Past 3 Years	85 (57%)	71 (79%)
Significant Deficiencies in Past 3 Years	65 (44%)	66 (73%)
Corrective Action Plans	2	2

Finally, the ABC Quality Division provides another measure of quality. ABC Quality is a voluntary quality improvement system for childcare providers. Providers receive an A+, A, B+, B, or C based on such measures as staffing ratios, teacher and director qualifications, and independent review. According to DSS, centers with a rating of A+ or A meet the highest quality child care standards in South Carolina. (http://www.scchildcare.org/media/1211/11-215-CTF_ABC_Broch_FnlR.pdf) Of the 90 private providers participating in CDEPP, 7 received an A+ or A rating. (Table 13) The seven that were not in the rating were primarily Head Start providers.

Table 13
CDEPP Private Providers by ABC Rating,
as of January 10, 2014

ABC Rating	**Number**	**%**
A+	**5**	**6%**
A	**2**	**2%**
B+	**43**	**48%**
B	**23**	**26%**

ABC Rating	Number	%
C	10	11%
Not in Rating	7	8%
TOTAL	90	

Public schools are exempt from ABC licensure. However, 19 public schools participating in CDEPP had ABC ratings. Of these 19 schools, approximately 13 were ABC ratings for afterschool programs operated by nonprofit entities such as Boys and Girls Clubs and YMCAs. Of the schools with ratings, four schools were rated B+ and two, B-.

Summary:

Available, public data demonstrate that the quality of existing CDEPP providers could and should be improved. Indeed, we know relatively little about the quality and nature of CDEPP services in both public and private centers.

Section III
Projections of At-Risk Children Served by District

CDEPP is intended to increase the number of four-year-olds in poverty who are served with a full-day, pre-kindergarten program which meets specific criteria for quality including minimum adult to child ratios, approved curriculum, etc. Students eligible to participate in CDEPP may enroll in an approved public school program or in an approved private childcare setting. The South Carolina Department of Education is responsible for approving all public school CDEPP classrooms while the Office of First Steps approves private childcare centers as well as some Head Start providers as the source of non-public school settings.

This section projects the number of four-year-olds and the numbers of four-year-olds projected to be eligible or the Federal free- or reduced-price lunch program and/or Medicaid in each district using current eligibility requirements and the 2010 United States Census data. It also estimates the percentage of at-risk four-year-olds in each district that are served by a publically funded early childhood education program.

Methodology

First, the 2010 Census provided information on the number of children in each district by sex and age. The estimated numbers of four-year-olds are children who were one-year-old in 2010. In 2013-14, the children would have been four years old.

The poverty index is the percentage of children in each district that were in school year 2012-13 eligible for the Federal free or reduced-price lunch program and/or Medicaid.

Multiplying the poverty index by the number of four-year-olds yields the projected number of at-risk four-year-olds in each district.

The South Carolina Office of Head Start Collaboration provided student information based on May 1, 2013 census data. This data are county-level.

The Department of Social Services provided the number of all four-year-olds served by the ABC Voucher Program between August 18, 2013 and October 2, 2013. This data are county-level.

In counties that have more than one school district, county-level data were disaggregated based on the percentage of at-risk four-year-olds in each district.

Not reflected in the numbers are: (1) an estimated 1,301 students served in centers approved by the Office of First Steps; and (2) students served in public schools in half-

day or full-day programs funded with Education Improvement Act (EIA) funds, federal funds, or local funds. Individual student data were not provided by the Office of First Steps to determine in which district the children served reside.

Results

Table 14 shows the results:

- There are an estimated 60,151 four-year-olds in South Carolina. Approximately, 71 percent or 42,412 of these children are in poverty.

- Of these four-year-olds in poverty, 40 percent live in districts that are currently eligible to participate in CDEPP.

- Of these in poverty, Head Start, ABC Child Care Voucher program, and CDEPP as administered in public schools serve approximately one-third or 32 percent of all four-year-olds in poverty in South Carolina. The additional 1,301 served in centers approved by the Office of First Steps increases the percentage to 35%.

- In the districts participating in CDEPP, a federal or state publically funded program serves approximately 68 percent or two-thirds of all children in poverty. Such publicly funding includes Head Start, ABC Child Care voucher program, and CDEPP in public or private centers.

If the General Assembly expanded CDEPP services to children in poverty residing in all other districts, the following statistics could be used:

In the non-CDEPP districts:

Total Number of At-Risk Four-Year-Olds	25,344
Number Served in Full-Day Publicly Funded Program	3,253
Estimated Not Served in Full-Day Program	22,091
If 68% participated in CDEPP	15,022

For comparison purposes, the last evaluation of the CDEPP report by the EOC, released on January 12, 2010, documented that after the third year of CDEPP's implementation in the trial and plaintiff school districts, approximately 78 percent of at-risk four-year-olds were being served with a publicly funded pre-kindergarten program in school districts implementing CDEPP. Given the fact that the CDEPP expansion occurred in districts with significantly greater numbers of at-risk four-year-olds and that providers, both public and private, had less than two months to prepare for the expansion, the 65 percent level of service will likely increase over time.

Does the number of children served in Table 14 represent an increase in the overall number of four-year-olds receiving educational services? There are no definitive data to

answer that question. Data on the number of four-year-olds served in locally funded programs either in a half-day or full-day setting are not maintained and not verifiable. Funding for the half-day 4K program in the EIA is based on the number of kindergarten children who are eligible for free and reduced lunch.

Table 14

School District	Estimated Number of 4-Year-Olds	2013-14 District Poverty Index	Estimated Number of 4-Year-Olds in Poverty	4-Year-Olds Served in Head Start	4-Year-Olds in ABC Child Care Voucher System	Public Schools CDEPP	Total Served	% of At-Risk 4-Year-Olds Served
Abbeville	277	78.82	218	62		72	134	61.4%
Aiken	1,982	71.87	1,424	172	9		181	12.7%
Allendale	126	98.42	124	33		52	85	68.5%
Anderson 1	639	57.98	370	65	4		69	18.6%
Anderson 2	261	69.26	181	32	2		34	18.6%
Anderson 3	189	80.73	153	27	1		28	18.6%
Anderson 4	261	68.40	179	31	2		33	18.6%
Anderson 5	1,082	69.58	753	133	7		140	18.6%
Bamberg 1	101	77.64	78	30	1	46	77	97.9%
Bamberg 2	65	98.13	64	24		42	66	103.8%
Barnwell 19	63	93.73	59	14		40	54	92.1%
Barnwell 29	71	85.12	60	15		18	33	54.1%
Barnwell 45	165	81.86	135	33			33	24.4%
Beaufort	2,146	67.92	1,458	123	4		127	8.7%
Berkeley	2,712	72.28	1,960	289	9	933	1,231	62.8%
Calhoun	180	91.49	165	8		100	108	65.6%
Charleston	4,664	63.21	2,948	548	32		580	19.7%
Cherokee	725	79.80	579	57	1	160	218	37.7%
Chester	420	81.86	344	110	1	200	311	90.5%
Chesterfield	544	82.08	447	138	3	89	230	51.5%
Clarendon 1	86	97.07	83	24		48	72	86.1%
Clarendon 2	232	91.48	212	61	1	111	173	81.3%
Clarendon 3	71	71.47	51	14		26	40	79.8%
Colleton	534	88.33	472	182	1	260	443	93.9%
Darlington	867	82.66	717	227	3	140	370	51.6%
Dillon 3	109	79.55	87	22		58	80	92.7%
Dillon 4	375	93.44	350	91	2	185	277	79.1%
Dorchester 2	1,737	58.49	1,016	57	7		64	6.3%
Dorchester 4	166	87.83	146	8	1	120	129	88.6%
Edgefield	281	73.72	207	47			47	22.7%
Fairfield	303	94.53	286	22		180	202	70.5%

School District	Estimated Number of 4-Year-Olds	2013-14 District Poverty Index	Estimated Number of 4-Year-Olds in Poverty	4-Year-Olds Served in Head Start	4-Year-Olds in ABC Child Care Voucher System	Public Schools CDEPP	Total Served	% of At-Risk 4-Year-Olds Served
Florence 1	1,314	73.02	959	164	7	349	520	54.2%
Florence 2	86	79.08	68	12	1	48	60	88.4%
Florence 3	309	93.35	288	49	2	160	212	73.3%
Florence 4	77	95.06	73	13	1	40	53	72.5%
Florence 5	73	75.16	55	9	0	44	54	98.1%
Georgetown	613	75.09	460	119	4	200	323	70.2%
Greenville	6,580	60.74	3,997	372	13		385	9.6%
Greenwood 50	808	74.51	602	172	1		173	28.7%
Greenwood 51	79	83.04	66	19		40	59	89.5%
Greenwood 52	76	70.75	54	15			15	28.6%
Hampton 1	151	85.09	128	52		100	152	118.3%
Hampton 2	66	97.24	64	26		38	64	99.7%
Horry	2,993	74.94	2,243	164	15		179	8.0%
Jasper	372	93.27	347	42	1	163	206	59.4%
Kershaw	830	69.48	577	73	2		75	13.0%
Lancaster	1,028	67.23	691	64	3		67	9.7%
Laurens 55	508	81.38	413	51	3	234	287	69.5%
Laurens 56	260	82.79	215	26	1	135	163	75.6%
Lee	207	97.46	202	42	1	65	108	53.5%
Lexington 1	1,652	51.72	854	56	6		62	7.3%
Lexington 2	833	78.03	650	43	5		48	7.3%
Lexington 3	177	78.88	140	9	1	100	110	78.9%
Lexington 4	226	86.87	196	13	1	193	207	105.6%
Lexington 5	1,059	44.49	471	31	3		34	7.3%
Marion	456	94.56	431	99		21	120	27.8%
Marlboro	318	93.24	297	115	2	247	364	122.8%
McCormick	82	90.01	74	38		59	97	131.4%
Newberry	485	76.05	369	106	2	80	188	51.0%
Oconee	794	72.32	574	60	6		66	11.5%
Orangeburg 3	253	96.42	244	25	1	137	164	67.1%
Orangeburg 4	277	84.04	233	24	1	138	163	70.2%
Orangeburg 5	712	92.50	659	68	3	445	517	78.5%
Pickens	1,241	65.03	807	106	3		109	13.5%
Richland 1	2,557	81.37	2,081	240	20	300	560	26.9%
Richland 2	1,802	59.37	1,070	123	10		133	12.5%
Saluda	197	82.12	162	42		66	108	66.8%
Spartanburg 1	323	66.91	216	20	2		22	10.2%

School District	Estimated Number of 4-Year-Olds	2013-14 District Poverty Index	Estimated Number of 4-Year-Olds in Poverty	4-Year-Olds Served in Head Start	4-Year-Olds in ABC Child Care Voucher System	Public Schools CDEPP	Total Served	% of At-Risk 4-Year-Olds Served
Spartanburg 2	729	65.21	475	44	4		48	10.1%
Spartanburg 3	211	74.86	158	15	1		16	10.1%
Spartanburg 4	238	72.44	172	16	1		17	9.9%
Spartanburg 5	604	64.35	389	36	3		39	10.0%
Spartanburg 6	734	72.04	529	49	4		53	10.0%
Spartanburg 7	793	78.09	619	58	5	280	342	55.3%
Sumter	1,625	81.76	1,329	250	13	220	483	36.4%
Union	347	80.95	281	71			71	25.3%
Williamsburg	404	97.57	394	122		199	321	81.4%
York 1	406	73.61	299	53	1		53	17.9%
York 2	407	44.50	181	32	1		32	17.9%
York 3	1,563	66.11	1,033	182	3		185	17.9%
York 4	703	28.06	197	35	1		35	17.9%
Remainder of SC	79							
TOTAL:	**60,151**		**42,412**	**6,364**	**249**	**6,981**	**13,594**	**32.1%**

Note: Including the 1,301 four-year-olds served in centers approved by the Office of First Steps, the percentage increases to 35%.

Note: In some districts, the percentage of at-risk four-year-olds served exceeds 100 percent because the percentages are based on the “estimated” number of four-year-olds in the district. The data are also based on 2010 Census data and do not reflect population mobility.

Section IV
PASS Performance of Children Served in CDEPP

The following documents the performance of children who were served in either a public or private Child Development Education Pilot Program (CDEPP) classroom in school years 2006-07, 2007-08, or 2008-09.

The first cohort of students who participated in CDEPP in 2006-07, either in a public school or private childcare setting, are hereafter referred to as Cohort 1. If all of these students advanced from one grade to the next each year, Cohort 1 would have been in grade 3 in the 2010-11 academic year, in grade 4 in the 2011-12 academic year, and in grade 5 in the 2012-13 academic year.

The second cohort of students who participated in CDEPP in 2007-08, either in a public school or private childcare setting, are hereafter referred to as Cohort 2. If all of these students advanced from one grade to the next each year, Cohort 2 would have been in grade 3 in the 2011-12 academic year and in grade 4 in the 2012-13 academic year.

The third cohort of students who participated in CDEPP in 2008-09, either in a public school or private childcare setting, are hereafter referred to as Cohort 3. If all of these students advanced from one grade to the next each year, Cohort 3 would have been in grade 3 in the 2012-13 academic year. (Table 15)

Table 15
Student Grade Level for Students in each Cohort

Academic Year	Cohort 1	Cohort 2	Cohort 3
2006-2007	4K (CDEPP)		
2007-2008	5K	4K (CDEPP)	
2008-2009	Grade 1	5K	4K (CDEPP)
2009-2010	Grade 2	Grade 1	5K
2010-2011	Grade 3	Grade 2	Grade 1
2011-2012	Grade 4	Grade 3	Grade 2

The Education Oversight Committee (EOC) staff obtained complete lists of students enrolled in CDEPP either in the South Carolina public schools or in private childcare centers approved by the Office of First Steps to School Readiness. Among the information these data files contained was the unique student identifier, a number assigned to all students enrolled in public schools in South Carolina. By arrangement with the Office of First Steps, each student participating in CDEPP at a private institution also was assigned a unique student identifier by the South Carolina Department of Education. The unique student identifier is a number associated with a student throughout his or her enrollment in public schools, which enables students to be followed over time. Also included was an indicator of whether each public school

student participated in the CDEPP. All students enrolled in First Steps were participants in the CDEPP program. Having the unique student identifier is crucial in monitoring the academic and social achievement of individual students over time.

For this study, the EOC used the unique student identifier and other demographic information (e.g., gender, date of birth) to obtain Palmetto Assessment of State Standards (PASS) scores in Reading and Research and Mathematics administered in 2011, 2012, and 2013 for CDEPP students. Previous studies (EOC, 2012) compared CDEPP students to other students in South Carolina who were previously enrolled in four-year-old prekindergarten programs. The current study compares the performance of CDEPP students with other subgroups using the PASS scores from 2011, 2012, and 2013.

Research Questions

1. How did the performance of the CDEPP students in reading and mathematics compare to:
   a. All other 3rd and 4th grade students in state who were eligible for subsidized meals?
   b. All other students in the CDEPP districts?
   c. All other students in CDEPP districts who received subsidized meals?

2. Analyzing grade 3 PASS reading and math scores over time, are there patterns of achievement for students served in CDEPP?

Results

The number of students served in CDEPP increased from the first cohort (2006-2007) to the second cohort (2007-2008), both in the public and the private school settings. (Table 16) In both cohorts, approximately 90 percent of students attended full-day four-year-old kindergarten in a public school and 10 percent in a private daycare setting.

Table 16
Number of CDEPP Students in Each Cohort

Cohort	Public School	Private	Total
1	2,681 (90.1%)	295 (9.9%)	2,976
2	4,476 (90.6%)	455 (9.4%)	4,831
3	4,252 (89.7%)	490 (10.3%)	4,742

Using the unique student identifier and additional information, the PASS achievement scores were obtained for students in all Cohorts. For a number of reasons the PASS information for all students in each Cohort could not be obtained. Some students may have moved out of South Carolina since their enrollment in CDEPP, other students may have been enrolled in private schools that are not required to assess students with PASS.

The percentages of CDEPP students for whom PASS results were obtained are presented in Table 17. For Cohort 1, PASS scores in grade 3 were obtained for approximately 75% of students, PASS scores in grade 4 were obtained for approximately 86% of students, and PASS scores in grade 5 were obtained for approximately 87% of students. For Cohort 2, PASS scores in grade 3 were obtained for approximately 74% of students, and in grade 4 for approximately 86% of students. For Cohort 3, grade 3 PASS scores were obtained for 76% of students.

Table 17

Number of Students in Each Cohort Matched to PASS Data

Cohort/PASS Match	Public School	Private	Total Number of Matches	Percent of Total Cohort
Cohort 1:				
Matched to 2011 PASS (Grade 3)	2,029	202	2,231	74.7
Matched to 2012 PASS (Grade 4)	2,333	235	2,568	86.0
Matched to 2013 PASS (Grade 5)	2,346	239	2,585	86.6
Cohort 2:				
Matched to 2011 PASS (Grade 3)	3,296	301	3,597	74.4
Matched to 2012 PASS (Grade 4)	3,792	353	4,145	85.8
Cohort 3:				
Matched to 2013 PASS (Grade 3)	3,248	356	3,604	76.0

The achievement of CDEPP students was compared to the achievement of three groups of non-CDEPP students: (1) non-CDEPP subsidized meal students in South Carolina; (2) non-CDEPP students in CDEPP districts, and (3) non-CDEPP subsidized meal students in CDEPP districts. The numbers of students in each of these student groups for each cohort are presented in Table 18.

Table 18

Number of Students in Each Group in Each Cohort with PASS Scores at Grade 3

Student Group	Cohort		
	1	2	3
CDEPP Students	2,231	3,597	3,604
Non-CDEPP Subsidized Meal Students in SC	29,216	28,266	29,138
Non-CDEPP Students in CDEPP Districts	6,232	6,202	5,924
Non-CDEPP Subsidized Meal Students in CDEPP Districts	4,308	4,266	3,892

Appendix G contains several tables that document the achievement of the Cohorts 1, 2, and 3 on PASS and compares the academic achievement with these three student groups as well as all other students in South Carolina. Appendix H documents PASS performance over time on 3rd grade reading across CDEPP and non-CDEPP school districts.

It should be noted that across reading and mathematics in grade 3, non-CDEPP students in South Carolina outperform CDEPP students. The research team will analyze the results of the 2014 administration of PASS in third grade to determine if the gap between CDEPP and all other students in South Carolina is closing over time or if there are any other trends developing.

Figure 1 presents the percentage of third graders scoring Met or Exemplary on PASS reading for CDEPP students and for the three groups of non-CDEPP students noted in Table 12. CDEPP students scored higher than students who qualified for free or reduced-price meals in the National School Lunch Program, resided in the CDEPP districts, but did not participate in the program as a four-year-old. The similarity between CDEPP students and non-CDEPP students in CDEPP districts and non-CDEPP subsidized meal students in South Carolina is also apparent.

Figure 1

Percentages of Students Scoring Met or Exemplary on PASS Grade 3 **Reading** by Cohort

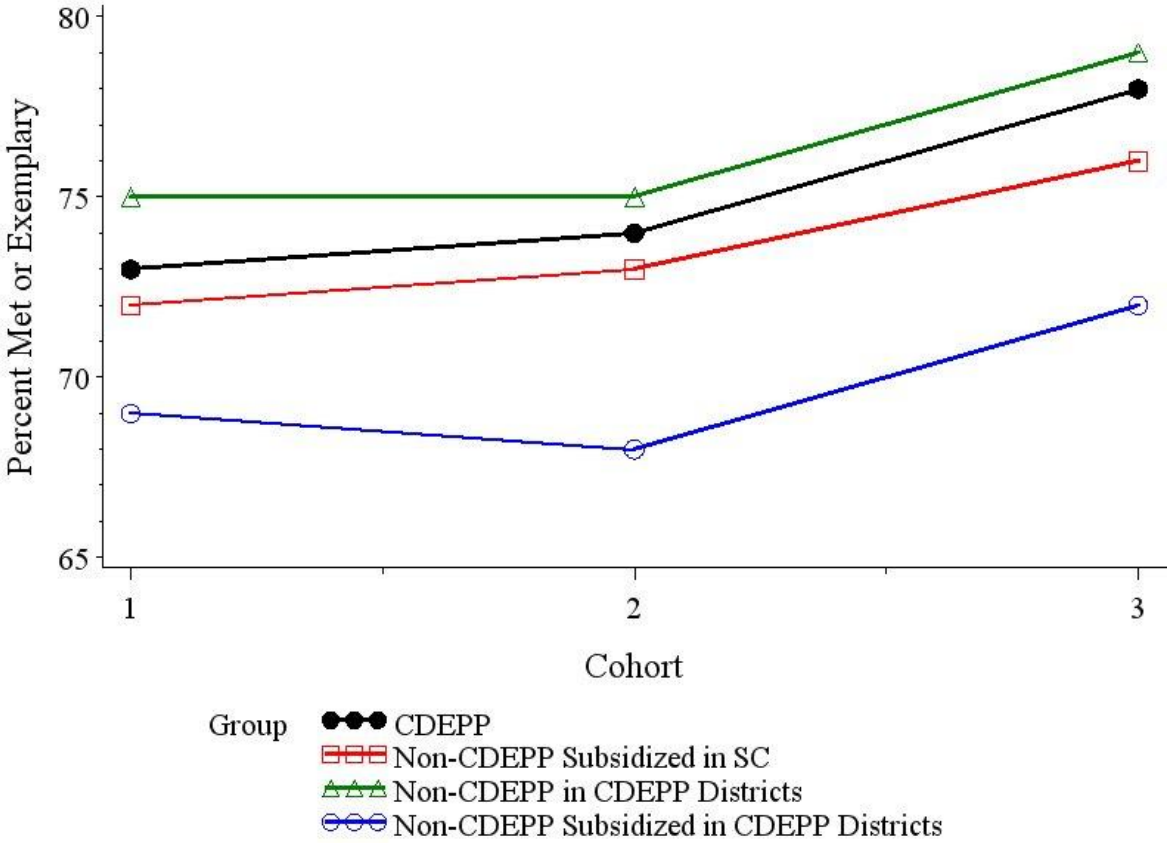
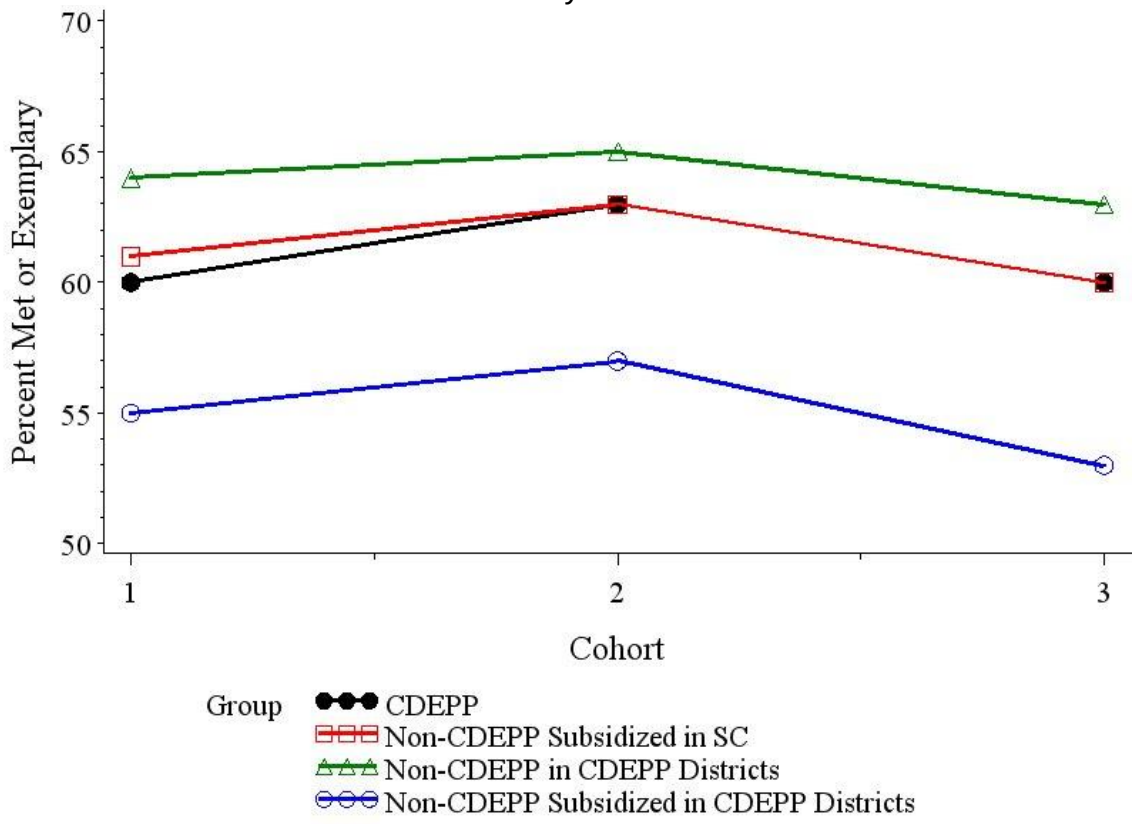


Figure 2 presents the percentage of students scoring Met or Exemplary in mathematics for the same groups of students. CDEPP students scored higher than students who qualified for free or reduced-price meals in the National School Lunch Program, resided in the CDEPP districts, but did not participate in the program as a four-year-old. CDEPP students score nearly identically as non-CDEPP subsidized meal students in South Carolina. They also scored similarly to non-CDEPP students in CDEPP districts.

Figure 2
Percentages of Students Scoring Met or Exemplary on PASS Grade 3 **Mathematics** by Cohort



In **reading**, comparing the performance of the CDEPP cohorts to students throughout South Carolina, for all cohorts at all grade levels a consistent pattern is observed:

- As one might expect, CDEPP students score lower than all non-CDEPP students in South Carolina. For example, the percentages of students scoring Met or Exemplary in grade 3 are 8, 7, and 5 percent lower for CDEPP students in Cohorts 1, 2, and 3, respectively.

- CDEPP students score higher than non-CDEPP students who receive subsidized meals and resided in CDEPP districts. The percentages of students who score Met or Exemplary in grade 3 are higher for CDEPP students by 4, 6, and 6 percent in Cohorts 1, 2, and 3, respectively.

- CDEPP students score similarly to students who receive subsidized meals in South Carolina. The percentages of students who score Met or Exemplary in grade 3 are within 2 percent for all cohorts.

- CDEPP students score similarly to non-CDEPP students in CDEPP districts. The percentages of students who score Met or Exemplary in grade 3 differ by 1 or 2 percent for all cohorts.

- At grade 4 the percentages of students scoring Exemplary are lower than in grade 3 and at grade 5 the percentages of students scoring Exemplary are lower than in grade 4, yet the patterns noted above remain.

Second, in **mathematics,** comparing the performance of CDEPP students to other students in South Carolina on **mathematics**, the data reveal similar patterns but the gaps are larger:

- Again, CDEPP students score lower than all non-CDEPP students in South Carolina. For example, the percentages of students scoring Met or Exemplary in grade 3 are 12, 9, and 12 percent lower for CDEPP students in Cohorts 1, 2, and 3, respectively.

- CDEPP students score higher than non-CDEPP students who receive subsidized meals in CDEPP districts. The percentages of students who score Met or Exemplary in grade 3 are 4, 7, and 5 percent higher for CDEPP students in Cohorts 1, 2, and 3, respectively.

- CDEPP students score similarly to students who receive subsidized meals in South Carolina. The percentages of students who score Met or Exemplary in grade 3 are within 2 percent for all cohorts.

- CDEPP students score similarly to non-CDEPP students in CDEPP districts. The percentages of students who score Met or Exemplary in grade 3 differ by 4, 1, and 4 percent in Cohorts 1 through 3, respectively.

For Cohort 2 in grade 4, and Cohort 1 in grade 5 the same pattern is observed. The only exception to this pattern is for Cohort 1 in grade 4, for which CDEPP students score similarly to non-CDEPP students in CDEPP districts, and do not score higher than subsidized meal students in SC or non-CDEPP students in CDEPP districts.

Summary

1. According to the PASS performance, a greater percentage of students who as four-year-olds participated in CDEPP achieved or exceeded state standards in reading and mathematics as compared to their peers who qualified for free or reduced-price meals under the National School Lunch Program, who resided in the same CDEPP districts, but who did not participate in the four-year-old program.

2. A greater percentage of students who as four-year-olds participated in CDEPP achieved or exceeded state standards in reading as compared to other students in the state who received subsidized meals. However, in mathematics, the two groups of students performed the same.

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Section V

Analytical Framework

The following is a report prepared by Drs. William H. Brown and Leigh K. D'Amico of the University of South Carolina USC Report on CDEPP Evaluation Planning for the future

Background

The General Assembly appropriated funds to evaluate the Child Development Education Pilot Program (CDEPP) to the Education Oversight Committee (EOC) from 2007-2010. The evaluation sought data related to the goal of CDEPP, which is to enhance school success of students living in poverty. Eligible for the program are children who are four years of age, who participate in either Medicaid or the federal subsidized lunch program or both and who reside in the Abbeville v. the State of South Carolina plaintiff districts. With recent expansion funding additional districts and geographic areas have been included in CDEPP. Children may enroll in CDEPP-approved public schools or private childcare centers.

During Fiscal Years 2007-08 through 2009-10 the EOC contracted with the University of South Carolina (USC) to serve as a partner in the evaluation of CDEPP. The longitudinal analysis documented the short-term and long-term effects of the program on developmental and academic progress of children participating in the program. The initial USC evaluation team was composed of the following personnel: Drs. William Brown, Fred Greer, Christine DiStefano, and Heather Smith Googe. The results of child and classroom assessments are documented in a series of EOC Reports (see References and EOC Website). In general, the CDEPP evaluation found modest and meaningful child progress from fall of CDEPP enrollment to fall of children's kindergarten year. Later analyses of the first two cohorts of CDEPP children compared to other same-aged peers in elementary school revealed less robust effects in third grade on PASS scores. Nevertheless, analyses of PASS scores for students who participated in CDEPP in school years 2006-07 and 2007-08 reveal that within CDEPP districts, pre-kindergartners' who participated in CDEPP outperformed same-age peers who did not participate in CDEPP and who were eligible for the free or reduced-price lunch program in third and fourth grade. Other comparisons are included in the *PASS Performance of the 2006-07 & 2007-08 CDEPP Cohorts Report* by the EOC. Unfortunately, the lack of grade level assessments, especially kindergarten entry assessments and subsequent first and second grade assessments of children's abilities and the nature of school services performed after pre-kindergarten makes long-term analyses difficult to interpret (e.g., pre-kindergarten to third grade PASS scores).

Fall 2013 CDEPP Evaluation Planning

In October 2013, Melanie Barton, Executive Director of the EOC, contacted William H. Brown, leader of the previous CDEPP Evaluation, to inquire about interest in planning and implementing an evaluation of the CDEPP Expansion with new funds allocated by the South Carolina General Assembly. Dr. Brown convened a small group of colleagues, many of who worked on the previous CDEPP Evaluation or other early childhood education projects at USC. Members of the USC team included Drs. Brown, D'Amico, Greer, and DiStefano, Anderson, and Miller (MPH).

After initial discussions, Dr. Brown and colleagues recommended that the EOC convene a well-informed Task Force of individuals who are familiar with CDEEPP and early childhood services. Included in the Task Force were: agency personnel (e.g., Department of Social Services, Office of First Steps, South Carolina Department of Education, and EOC); administrators in early childhood education professionals (e.g., CDEPP Principals, Head Start Administrators); early childhood higher education faculty (e.g., two and four-year institutions of higher education); and early childhood education evaluators from USC. Appendix I is a list of the participants. The EOC sent invitations to the stakeholders and a half-day meeting was planned and facilitated by Lorin Anderson, PhD, an expert in educational and program evaluation. Dr. Anderson discussed relevant previous evaluations including Head Start and Title I. He then guided a group discussion that focused on purposes and goals for CDEPP and a CDEPP Evaluation. Participants' input was recorded and subsequently analyzed to provide information for developing a South Carolina Child Development Education Pilot Program Conceptual Framework for evaluating CDEPP. (Appendix J)

The initial CDEPP Conceptual Framework was sent to participants for their review along with a letter from the EOC. (Appendix K) The correspondence included a letter outlining essential elements of the conceptual framework, a schematic representing the framework, and a glossary of terms to promote better communication about important dimensions of the framework. The glossary is Appendix L. Stakeholders were very favorable about the Conceptual Framework. One representative of a four-year university suggested including Leadership in the conceptual framework, which we did. One participant expressed concerns about "high stakes testing." The concern quite likely reflects a common perception among many early childhood educators that some forms of assessment may have deleterious effects on young children. Another participant who was very positive asked about the possibility of convening a similar group of stakeholders to focus on services for infants and toddlers from high needs families. Ms. Barton has agreed to discuss the possibility with interested others this spring.

Next Steps for CDEPP Evaluation

As mentioned before, we plan to complete the analysis of stakeholders' comments on the South Carolina Child Development Education Pilot Program Conceptual Framework. One participant sent in an extensive and thoughtful commentary after the holidays that we have not yet integrated into a synthesis of participants' comments. We also propose to perform the following CDEPP Evaluation activities in the remainder of this fiscal year.

- Convene a group of well-informed administrators and evaluators to discuss feasible measures for program outcomes in future CDEPP Evaluations;
- Develop and administer a well-targeted Needs Assessment of CDEPP teachers that focuses on the professional development in area of language development and emergent literacy; and
- Based on the South Carolina Child Development Education Pilot Program (CDEPP) Conceptual Framework developed in November and December of 2013 (see letter, schematic, and glossary of terms, we plan to collaborate with Ms. Barton and EOC personnel to determine and implement feasible activities in the remainder of this fiscal year as a procedural pilot of future evaluations and prepare for full implementation of an evaluation in fall of 2014.

References

PASS Performance of the 2006-07 & 2007-08 CDEPP Cohorts Report. Columbia, SC: The Education Oversight Committee Website at eoc.sc.gov/ Kevin Andrews, author.

2010 Implementation and Expansion of the Child Development Education Pilot Program (CDEPP): Evaluation Report from the Education Oversight Committee. (2010, October). Columbia, SC: The Education Oversight Committee Website at eoc.sc.gov/ William H. Brown, Christine DiStefano, and Fred Greer, collaborators and co-authors]

2009-2010 Implementation and Expansion of the Child Development Education Pilot Program (CDEPP): Evaluation Report from the Education Oversight Committee. (2010, January). Columbia, SC: The Education Oversight Committee Website at eoc.sc.gov/ [full report 143 pages William H. Brown, Christine DiStefano, and Fred Greer, collaborators and co-authors]

2008-2009 Implementation and Expansion of the Child Development Education Pilot Program (CDEPP: A Report from the Education Oversight Committee pursuant to Proviso 1.75 of the 2007-2008 General Appropriation Act). (2009 January). Columbia, SC: The Education Oversight Committee Website at eoc.sc.gov/ [William H. Brown, Christine DiStefano, and Fred Greer, collaborators and co-authors]

Interim Evaluation Report on the First Year Implementation of the Child Development Education Pilot Program (CDEPP: A Report from the Education Oversight Committee pursuant to Proviso 1.75 of the 2006-2007 General Appropriation Act (2007, February). Columbia, SC: The Education Oversight Committee Website at eoc.sc.gov/ [William H. Brown, Christine DiStefano, and Fred Greer, collaborators and co-authors]

2007-2008 Implementation and Expansion of the Child Development Education Pilot Program (CDEPP) Evaluation Report. A Report from the Education Oversight Committee pursuant to Proviso 1.66 of the 2007-2008 General Appropriation Act. (2007, December). Columbia, SC: The Education Oversight Committee Website at eoc.sc.gov/ [full report of 125 pages with additional summary document of 75 pages William H. Brown, Christine DiStefano, and Fred Greer, collaborators and co-authors]

Section VI
Summary of Findings and Recommendations

Expansion of CDEPP

At-risk four-year-olds residing in 51 school districts in the state were eligible to participate in CDEPP in Fiscal Year 2013-14 because the General Assembly appropriated $48.8 million or an increase of $26.1 million for the program.

CDEPP Appropriations, FY2013-14

	General Fund Recurring	EIA Recurring	Nonrecurring Revenues	Total
Department of Education	$14,083,439	$20,240,998	$2,678,000	**$37,002,437**
Office of First Steps	$10,335,864	$0	$1,442,000	**$11,777,864**
Total	$24,419,303	$20,240,998	$4,120,000	**$48,780,301**

Based on the first half of the fiscal year, the expansion of CDEPP in public school districts as administered by the South Carolina Department of Education and in centers as administered by the Office of First Steps to School Readiness will result in an estimated 8,282 at-risk four-year-olds served in Fiscal Year 2013-14.

2013-14 CDEPP (projections)	Public Schools	Private Settings
Number of Providers	47 districts 150 schools	82 Childcare Centers 8 Head Start Centers
Number of Classrooms	391	103
Number of Children	6,981	1,301
% Expenditures on Direct Services to Children	99%	73%
Minimum Projected End-of-Year Surplus	$5,471,579	$1,709,552

As compared to the prior school year in which 5,316 at-risk four-year-olds were served in CDEPP, there will be an additional 2,966 at-risk four-year-olds served in 2013-14. The number of children served in centers approved by the Office of First Steps will double while the number in public schools will increase by 50 percent. The expansion of CDEPP into more urban, suburban, and populated districts that have more childcare centers is one explanation for the significant increase. This data support prior CDEPP evaluations: expansion of CDEPP will require the inclusion of private childcare centers due to the space limitations in public schools.

Approximately one-third at-risk four-year-olds in South Carolina are estimated to be served in a publically funded early education program that includes Head Start, CDEPP and the ABC Voucher Program. Head Start, the ABC Voucher Program and CDEPP, serve approximately 68 percent of at-risk four-year-olds living in school districts participating in CDEPP.

Recommendation 1: Unless the General Assembly expands the program to include at-risk four-year-olds living in other school districts in Fiscal Year 2014-15, no additional funds are needed to implement the program in Fiscal Year 2014-15. The school districts of Anderson 3, Lexington 2 and Union could participate in the program with the current appropriation levels as authorized to the Department of Education. Furthermore, current centers participating in the program through the Office of First Steps could experience a 15 percent increase in enrollment and still have enough funds to serve these children at current appropriation levels.

Recommendation 2: The General Assembly should determine how the projected end-of-year surplus funds, which should be at least $7.1 million, should be expended, either for issues related to this program or for other purposes.

Data Quality Issues

While CDEPP is in its eighth year of operation, there continue to be issues of program and data quality including finance and student-level data. While the EOC has begun discussions with individuals responsible for the data management of the program, the issue of whether students receive or have received unique student identifiers upon being enrolled in the program, a requirement of the proviso, continue to be questioned. Students who participate in private CDEPP programs must receive a unique student identifier if the state of South Carolina intends on measuring the academic and social performance of these students over time. Moreover, the central question of how the data management system that the Office of First Steps is implementing, BRIDGES, compares with or is compatible with the data management system that the South Carolina Department of Education is implementing, SLICE, is information that is critical to the future accountability of this program. The issue of two separate data systems for CDEPP should be carefully considered.

Recommendation 3: The South Carolina Department of Education and the Office of First Steps to School Readiness must mutually agree upon how students in this program will be monitored over time and enter into a formal memorandum of agreement that will be a condition of participation by non-public school providers participating in the program. For example, how will children be assessed and for what purpose?

Program Quality Issues

Without having a readiness assessment that is administered to children entering CDEPP as four-year-olds and the same or an aligned readiness assessment that is administered to all children entering kindergarten as five-year-olds, then determining the impact of CDEPP on early literacy, early mathematical ability, and social and emotional development is impossible. Given the existing public information on the centers participating in the program, clearly the quality of educational data on the centers and schools participating in the program, and the quality of educational opportunities could be improved.

Academic Performance

According to the academic performance of the initial CDEPP cohorts on the Palmetto Assessment of State Standards (PASS), a greater percentage of students who as four-year-olds participated in CDEPP achieved or exceeded state standards in reading and mathematics as compared to their peers who qualified for free or reduced-price meals under the National School Lunch Program, who resided in the same CDEPP districts, but who did not participate in the four-year-old program. In addition, a greater percentage of students who as four-year-olds participated in CDEPP achieved or exceeded state standards in reading as compared to other students in the state who received subsidized meals. However, in mathematics, the two groups of students performed the same.

Recommendation 4: The EOC has already recommended to the General Assembly that up to $3.0 million in existing funds for the half-day EIA program funds to implement a readiness assessment for all four-year-olds entering CDEPP, for all four-year-olds enrolled in a half-day four-year-old program in public schools, and for all five-year-olds enrolled in kindergarten beginning in school year 2014-15. The assessment should not be used for state or federal accountability purposes but as a tool to measure the effectiveness of educational programs provided to young children and most importantly, for diagnostic purposes to assist classroom teachers in meeting the individual educational needs of students. This recommendation does not prevent the state from collaborating with other states in creating future readiness assessments.

Recommendation 5: Looking to the future, the state should establish a CDEPP Provider Readiness Rate compiled from the screening results of children who attended and completed CDEPP in either public or private centers. Providers would have to have a readiness rate above the minimum set by the State Board of Education before they are granted provider status. Existing CDEPP providers whose readiness rate falls below the minimum would be placed on probation and

required to submit and implement an improvement plan before participating in the program and receiving future state funds.

Recommendation 6: In the meantime, the EOC recommends that any private childcare center participating in CDEPP must have an ABC rating of B or better in order to participate. In addition, if the Department of Social Services documents that the health, safety or welfare of a four-year-old attending a public school participating in CDEPP is at risk, then the Department should be allowed to immediately revoke the license or approval of the public school to participate in CDEPP.

Appendix A
Provisos Governing CDEPP

1.83. and 1A.34. (SDE: Child Development Education Pilot Program) There is created the South Carolina Child Development Education Pilot Program (CDEPP). This program shall be available for the current school year on a voluntary basis and shall focus on the developmental and learning support that children must have in order to be ready for school and must incorporate parenting education.

(A) For the current school year, with funds appropriated by the General Assembly, the South Carolina Child Development Education Pilot Program shall first be made available to eligible children from the trial and plaintiff school districts in the Abbeville County School District et. al. vs. South Carolina and then expanded to eligible children residing in school districts with a poverty index of seventy-five percent or greater.

Unexpended funds from the prior fiscal year for this program shall be carried forward and shall remain in the program. In rare instances, students with documented kindergarten readiness barriers may be permitted to enroll for a second year, or at age five, at the discretion of the Department of Education for students being served by a public provider or at the discretion of the Office of South Carolina First Steps to School Readiness for students being served by a private provider.

(B) Each child residing in the pilot districts, who will have attained the age of four years on or before September first, of the school year, and meets the at-risk criteria is eligible for enrollment in the South Carolina Child Development Education Pilot Program for one year.

The parent of each eligible child may enroll the child in one of the following programs:

(1) a school-year four-year-old kindergarten program delivered by an approved public provider; or

(2) a school-year four-year-old kindergarten program delivered by an approved private provider.

The parent enrolling a child must complete and submit an application to the approved provider of choice. The application must be submitted on forms and must be accompanied by a copy of the child's birth certificate, immunization documentation, and documentation of the student's eligibility as evidenced by family income documentation showing an annual family income of one hundred eighty-five percent or less of the federal poverty guidelines as promulgated annually by the U.S. Department of Health and Human Services or a statement of Medicaid eligibility.

In submitting an application for enrollment, the parent agrees to comply with provider attendance policies during the school year. The attendance policy must state that the program consists of 6.5 hours of instructional time daily and operates for a period of not less than one hundred eighty days per year. Pursuant to program guidelines, noncompliance with attendance policies may result in removal from the program.

No parent is required to pay tuition or fees solely for the purpose of enrolling in or attending the program established under this provision. Nothing in this provision prohibits charging fees for childcare that may be provided outside the times of the instructional day provided in these programs.

If by October first of the school year at least seventy-five percent of the total number of eligible CDEPP children in a district or county are projected to be enrolled in CDEPP, Head Start or ABC Child Care Program as determined by the Department of Education and the Office of First Steps, CDEPP providers may then enroll pay-lunch children who score at or below the twenty-fifth national percentile on two of the three DIAL-3 subscales and may receive reimbursement for these children if funds are available.

(C) Public school providers choosing to participate in the South Carolina Four-Year-Old

Child Development Kindergarten Program must submit an application to the Department of Education. Private providers choosing to participate in the South Carolina Four-Year-Old Child Development Kindergarten Program must submit an application to the Office of First Steps. The application must be submitted on the forms prescribed, contain assurances that the provider meets all program criteria set forth in this provision, and will comply with all reporting and assessment requirements.

Providers shall:

(1) comply with all federal and state laws and constitutional provisions prohibiting discrimination on the basis of disability, race, creed, color, gender, national origin, religion, ancestry, or need for special education services;

(2) comply with all state and local health and safety laws and codes;

(3) comply with all state laws that apply regarding criminal background checks for employees and exclude from employment any individual not permitted by state law to work with children;

(4) be accountable for meeting the education needs of the child and report at least quarterly to the parent/guardian on his progress;

(5) comply with all program, reporting, and assessment criteria required of providers;

(6) maintain individual student records for each child enrolled in the program to include, but not be limited to, assessment data, health data, records of teacher observations, and records of parent or guardian and teacher conferences;

(7) designate whether extended day services will be offered to the parents/guardians of children participating in the program;

(8) be approved, registered, or licensed by the Department of Social Services; and

(9) comply with all state and federal laws and requirements specific to program providers.

Providers may limit student enrollment based upon space available. However if enrollment exceeds available space, providers shall enroll children with first priority given to children with the lowest scores on an approved pre-kindergarten readiness assessment. Private providers shall not be required to expand their programs to accommodate all children desiring enrollment. However, providers are encouraged to keep a waiting list for students they are unable to serve because of space limitations.

(D) The Department of Education and the Office of First Steps to School Readiness shall:

(1) develop the provider application form;

(2) develop the child enrollment application form;

(3) develop a list of approved research-based preschool curricula for use in the program based upon the South Carolina Content Standards, provide training and technical assistance to support its effective use in approved classrooms serving children;

(4) develop a list of approved pre-kindergarten readiness assessments to be used in conjunction with the program, provide assessments and technical assistance to support assessment administration in approved classrooms serving children;

(5) establish criteria for awarding new classroom equipping grants;

(6) establish criteria for the parenting education program providers must offer;

(7) establish a list of early childhood related fields that may be used in meeting the lead teacher qualifications;

(8) develop a list of data collection needs to be used in implementation and evaluation of the program;

(9) identify teacher preparation program options and assist lead teachers in meeting teacher program requirements;

(10) establish criteria for granting student retention waivers; and

(11) establish criteria for granting classroom size requirements waivers.

(E) Providers of the South Carolina Child Development Education Pilot Program shall offer a complete educational program in accordance with age-appropriate instructional practice and a research based preschool curriculum aligned with school success. The program must focus on the developmental and learning support children must have in order to be ready for school. The provider must also incorporate parenting education that promotes the school readiness of preschool children by strengthening parent involvement in the learning process with an emphasis on interactive literacy.

Providers shall offer high-quality, center-based programs that must include, but shall not be limited to, the following:

(1) employ a lead teacher with a two-year degree in early childhood education or related field or be granted a waiver of this requirement from the Department of Education or the Office of First Steps to School Readiness;

(2) employ an education assistant with pre-service or in-service training in early childhood education;

(3) maintain classrooms with at least ten four-year-old children, but no more than twenty four-year-old children with an adult to child ratio of 1:10. With classrooms having a minimum of ten children, the 1:10 ratio must be a lead teacher to child ratio. Waivers of the minimum class size requirement may be granted by the South Carolina Department of Education for public providers or by the Office of First Steps to School Readiness for private providers on a case-by-case basis;

(4) offer a full day, center-based program with 6.5 hours of instruction daily for one hundred eighty school days;

(5) provide an approved research-based preschool curriculum that focuses on critical child development skills, especially early literacy, numeracy, and social/emotional development;

(6) engage parents' participation in their child's educational experience that shall include a minimum of two documented conferences per year; and

(7) adhere to professional development requirements outlined in this article.

(F) Every classroom providing services to four-year-old children established pursuant to this provision must have a lead teacher with at least a two-year degree in early childhood education or related field and who is enrolled and is demonstrating progress toward the completion of a teacher education program within four years. Every classroom must also have at least one education assistant per classroom who shall have the minimum of a high school diploma or the equivalent, and at least two years of experience working with children under five years old. The teaching assistant shall have completed the Early Childhood Development Credential (ECD) 101 or enroll and complete this course within twelve months of hire. Providers may request waivers to the ECD 101 requirement for those assistants who have demonstrated sufficient experience in teaching children five years old and younger. The providers must request this waiver in writing to their designated administrative agency (First Steps or the Department of Education) and provide appropriate documentation as to the qualifications of the teaching assistant.

(G) The General Assembly recognizes there is a strong relationship between the skills and preparation of pre-kindergarten instructors and the educational outcomes of students. To improve these education outcomes, participating providers shall require all personnel providing instruction and classroom support to students participating in the South Carolina Child Development Education Pilot Program to participate annually in a minimum of fifteen hours of professional development to include teaching children from poverty. Professional development should provide instruction in strategies and techniques to address the age-appropriate progress of pre-kindergarten students in developing emergent literacy skills, including but not limited to, oral communication, knowledge of print and letters, phonemic and phonological awareness, and

vocabulary and comprehension development.

(H) Both public and private providers shall be eligible for transportation funds for the transportation of children to and from school. Nothing within this provision prohibits providers from contracting with another entity to provide transportation services provided the entities adhere to the requirements of Section 56-5-195. Providers shall not be responsible for transporting students attending programs outside the district lines. Parents choosing program providers located outside of their resident district shall be responsible for transportation. When transporting four-year-old child development students, providers shall make every effort to transport them with students of similar ages attending the same school. Of the amount appropriated for the program, not more than $185 per student shall be retained by the Department of Education for the purposes of transporting four-year-old students. This amount must be increased annually by the same projected rate of inflation as determined by the Division of Research and Statistics of the Budget and Control Board for the Education Finance Act.

(I) For all private providers approved to offer services pursuant to this provision, the Office of First Steps to School Readiness shall:

(1) serve as the fiscal agent;

(2) verify student enrollment eligibility;

(3) recruit, review, and approve eligible providers. In considering approval of providers, consideration must be given to the provider's availability of permanent space for program service and whether temporary classroom space is necessary to provide services to any children;

(4) coordinate oversight, monitoring, technical assistance, coordination, and training for classroom providers;

(5) serve as a clearing house for information and best practices related to four-year-old kindergarten programs;

(6) receive, review, and approve new classroom grant applications and make recommendations for approval based on approved criteria;

(7) coordinate activities and promote collaboration with other private and public providers in developing and supporting four-year-old kindergarten programs;

(8) maintain a database of the children enrolled in the program; and

(9) promulgate guidelines as necessary for the implementation of the pilot program.

(J) For all public school providers approved to offer services pursuant to this provision, the Department of Education shall:

(1) serve as the fiscal agent;

(2) verify student enrollment eligibility;

(3) recruit, review, and approve eligible providers. In considering approval of providers, consideration must be given to the provider's availability of permanent space for program service and whether temporary classroom space is necessary to provide services to any children;

(4) coordinate oversight, monitoring, technical assistance, coordination, and training for classroom providers;

(5) serve as a clearing house for information and best practices related to four-year-old kindergarten programs;

(6) receive, review, and approve new classroom grant applications and make recommendations for approval based on approved criteria;

(7) coordinate activities and promote collaboration with other private and public providers in developing and supporting four-year-old kindergarten programs;

(8) maintain a database of the children enrolled in the program; and

(9) promulgate guidelines as necessary for the implementation of the pilot program.

(K) The General Assembly shall provide funding for the South Carolina Child Development Education Pilot Program. For the current school year, the funded cost per child shall be $4,218 increased annually by the rate of inflation as determined by the Division of Research and Statistics of the Budget and Control Board for the Education Finance Act. Eligible students enrolling with private providers during the school year shall be funded on a pro rata basis determined by the length of their enrollment. Private providers transporting eligible children to and from school shall be eligible for a reimbursement of $550 per eligible child transported. Providers who are reimbursed are required to retain records as required by their fiscal agent. Providers enrolling between one and six eligible children shall be eligible to receive up to $1,000 per child in materials and equipment grant funding, with providers enrolling seven or more such children eligible for grants not to exceed $10,000. Providers receiving equipment grants are expected to participate in the program and provide high-quality, center-based programs as defined herein for a minimum of three years. Failure to participate for three years will require the provider to return a portion of the equipment allocation at a level determined by the Department of Education and the Office of First Steps to School Readiness. Funding to providers is contingent upon receipt of data as requested by the Department of Education and the Office of First Steps.

(L) Pursuant to this provision, the Department of Social Services shall:

(1) maintain a list of all approved public and private providers; and

(2) provide the Department of Education and the Office of First Steps information necessary to carry out the requirements of this provision.

(M) The Office of First Steps to School Readiness shall be responsible for the collection and maintenance of data on the state funded programs provided through private providers.

(N) Of the funds appropriated, $300,000 shall be allocated to the Education Oversight Committee to conduct an annual evaluation of the South Carolina Child Development Education Pilot Program and to issue findings in a report to the General Assembly by January fifteenth of each year. The evaluation shall include, but is not limited to: (1) student data including the number of at-risk four-year-old kindergarten students served in publically funded programs, by county and by program; (2) program effectiveness including developmentally appropriate assessments of children to measure emerging literacy and numeracy; (3) individual classroom assessments to determine program quality; (4) longitudinal analysis of academic and non-academic measures of success for children who participated in the program; and (5) an evaluation of the professional development, monitoring and assistance offered to public and private providers.

To aid in this evaluation, the Education Oversight Committee shall determine the data necessary and both public and private providers are required to submit the necessary data as a condition of continued participation in and funding of the program. This data shall include developmentally appropriate measures of student progress. Additionally, the Department of Education shall issue a unique student identifier for each child receiving services from a private provider. The Department of Education shall be responsible for the collection and maintenance of data on the public state funded full day and half-day four-year-old kindergarten programs. The Office of First Steps to School Readiness shall be responsible for the collection and maintenance of data on the state funded programs provided through private providers. The Education Oversight Committee shall use this data and all other collected and maintained data necessary to conduct a research based review of the program's implementation and assessment of student success in the early elementary grades.

1.87. (SDE: CDEPP Expansion) If by October first, First Steps or the Department of Education determine they will not expend the full amount of the CDEPP expansion funds allocated to each they are permitted to transfer any unspent funds to the other, provided that

they will be used for expansion. First Steps and the Department of Education must report to the Chairman of the Senate Finance Committee and the Chairman of the House Ways and Means Committee no later than February 1st how many additional 4K programs have opened and how many additional students have been served. A public school district receiving funds pursuant to the provisions of the CDEPP expansion cannot build or add additional space, to include the addition of mobile units and also to include displacing currently enrolled students out of their current classrooms or schools, to accommodate students in a new 4-K program.

118.17. (SR: Non-recurring Revenue) (A) The source of revenue appropriated in this provision is non-recurring revenue generated from the following sources:

(1) $159,845,460 from Fiscal Year 2012-13 unobligated general fund revenue as certified by the Board of Economic Advisors;

(2) $1,782,396 from the LCD Hitachi Settlement; and

(3) Funds from Settlement of the 2003-2012 NPM Adjustments Under the Tobacco Master Settlement Agreement which shall be transferred to the General Fund of the State.

This revenue is deemed to have occurred and is available for use in Fiscal Year 2013-2014 after September 1, 2013, following the Comptroller General's close of the state's books on Fiscal Year 2012-13.

Any restrictions concerning specific utilization of these funds are lifted for the specified fiscal year. The above agency transfers shall occur no later than thirty days after the close of the books on Fiscal Year 2012-13 and shall be available for use in Fiscal year 2013-2014.

(B) The appropriations in this provision are listed in priority order. Item (1) must be funded first and each remaining item must be fully funded before any funds are allocated to the next item. Provided, however, that any individual item may be partially funded in the order in which it appears to the extent that revenues are available.

The State Treasurer shall disburse the following appropriations by September 30, 2013, for the purposes stated:

****(1) *Part IA - General Fund..... $50,739,599*;**

(2) X22 - Local Government Fund-State Treasurer
Local Government Fund..... $29,999,999;

(3) H63 - Department of Education
(a) Governor's School for the Arts and Humanities
Data Network Wiring..... $187,000;
(b) Transportation - Fuel and Bus Parts..... $6,426,188;
(c) Instructional Materials..... $22,667,978;
(d) 4K Statewide at Risk Phase In - Districts with
75% + Poverty..... $4,120,000;

(3.1) Of the funds appropriated above to the Department of Education for 4K Statewide at Risk Phase In - Districts with 75% + Poverty, 35% shall be distributed to First Steps to School Readiness for the Child Development Education Pilot Program (CDEPP) and 65% shall be retained by the Department of Education for the Child Development Education Pilot Program (CDEPP).

Source: 2013-14 General Appropriation Act as ratified by the General Assembly.

Appendix B
Data Request Letters

MEMORANDUM

TO: Susan DeVenny
Dan Wuori

FROM: Melanie Barton

DATE: October 25, 2013

IN RE: Data Request for CDEPP Evaluation

Pursuant to Provisos 1.83. and 1A.34. of the 2013-14 General Appropriation Act, the Education Oversight Committee will provide a report to the General Assembly on the Child Development Education Pilot Program (CDEPP) by January 15, 2014. The initial report will focus on the number of children served and the expansion efforts in both public and private providers along with an analysis of student achievement data on the Palmetto Assessment of State Standards (PASS) in grades 3, 4 and 5. After the November 1 meeting of early childhood experts, the EOC will formulate a long-range evaluation model focused on program effectiveness.

The purpose of meeting with you is to provide an outline of data that the Office of First Steps should provide to the EOC staff by **December 2, 2013** in Excel files. The data are summarized in the attachments.

Then, the EOC respectfully requests that the final, year-end data files which represent the 135-day average daily membership be provided to the EOC by June 1, 2014 with final financial data submitted no later than July 15, 2014. In addition, the EOC would ask that the Office of First Steps collect the following information over the course of the school year and report the results by June 1, 2014:

> Document professional development hours and course topics provided to or secured for teachers and aides of the CDEPP classrooms;
>
> Document any technical assistance and monitoring to each CDEPP provider; and
>
> Document any parent education programs provided by the CDEPP provider and/or the Office of First Steps.

Neil C. Robinson, Jr.
CHAIR
Barbara B. Hairfield
VICE CHAIR
J. Phillip Bowers
Dennis Drew
Mike Fair
Nikki Haley
R. Wesley Hayes, Jr.
Alex Martin
John W. Matthews, Jr.
Daniel B. Merck
Joseph H. Neal
Andrew S. Patrick
Evelyn R. Perry
J. Roland Smith
Patti J. Tate
John Warner
David Whittemore
Mick Zais

Melanie D. Barton
EXECUTIVE DIRECTOR

Summary of Data Requests

Provider Information

Name, County, City, DSS License #, etc.

CDEPP Classroom Information

Number of classes, Number of students, Number of students transported, Curriculum, Education Level of Teacher

CDEPP Students

Name, Unique Student Identifier, Race, Sex, Date of Birth, Eligibility (Medicaid or Free/Reduced Price Lunch), Enrollment Date, Withdrawal Date, DIAL Scores

Non-CDEPP Students in CDEPP Classrooms

Name, Unique Student Identifier, Race, Sex, Date of Birth, Lunch Status, Enrollment Date, Withdrawal Date, DIAL Scores

Program Funding and Expenditures

Reimbursements to Providers

Ongoing Data Collection:

Professional Development (Hours and content)
Monitoring Visits and Technical Assistance
Parent Education

SC EDUCATION OVERSIGHT COMMITTEE

Reporting facts. Measuring change. Promoting progress.

MEMORANDUM

TO: Briana Timmerman
Penny Danielson
Mellanie Jinnette

FROM: Melanie Barton Melanie Barton

DATE: October 30, 2013

IN RE: Data Request for CDEPP Evaluation

Pursuant to Provisos 1.83. and 1A.34. of the 2013-14 General Appropriation Act, the Education Oversight Committee will provide a report to the General Assembly on the Child Development Education Pilot Program (CDEPP) by January 15, 2014. The initial report will focus on the number of children served and the expansion efforts in both public and private providers along with an analysis of student achievement data on the Palmetto Assessment of State Standards (PASS) in grades 3, 4 and 5. After the November 1 meeting of early childhood experts, the EOC will formulate a long-range evaluation model focused on program effectiveness.

The purpose of meeting with you is to provide an outline of data that the South Carolina Department of Education should provide to the EOC staff by **December 2, 2013** in Excel files. The data are summarized in the attachments.

Then, the EOC respectfully requests that the final, year-end data files which represent the 135-day average daily membership be provided to the EOC by June 1, 2014 with final financial data submitted no later than July 15, 2014. In addition, the EOC would ask that the Department collect the following information over the course of the school year and report the results by June 1, 2014:

> Document professional development hours and course topics provided to or secured for teachers and aides of the CDEPP districts;
>
> Document any technical assistance and monitoring to each CDEPP district; and
>
> Document any parent education programs provided by the CDEPP district or school and/or the Department.

Neil C. Robinson, Jr.
CHAIR

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Patti J. Tate

John Warner

David Whittemore

Mick Zais

Melanie D. Barton
EXECUTIVE DIRECTOR

Summary of Data Requests

Provider Information

District, School, CDEPP Coordinator, Principal, DSS License #, New Providers for 2013-14, etc.

CDEPP Classroom Information

Number of classes, Number of students, Number of students transported, Curriculum

CDEPP Students

Name, Unique Student Identifier, Race, Sex, Date of Birth, Eligibility (Medicaid or Free/Reduced Price Lunch), Enrollment Date, Withdrawal Date, DIAL Scores

Non-CDEPP Students in CDEPP Classrooms

Name, Unique Student Identifier, Race, Sex, Date of Birth, Lunch Status, Enrollment Date, Withdrawal Date, DIAL Scores

Program Funding and Expenditures

Reimbursements to Districts

Ongoing Data:

Professional Development (Hours and content)
Monitoring Visits and Technical Assistance
Parent Education Programs

Appendix C
Early Childhood Allocations to School Districts, FY 2013-2014

District Name	EIA Half Day Program Allocations	CDEPP Allocations - Original Districts*	CDEPP Allocations - Expansion Districts - Per Pupil	CDEPP Allocations - Supplies and Materials**	Total Early Childhood Funding by District
Abbeville	$ -	$ 303,696.00	$ -	$ -	$ 303,696.00
Aiken	$ 768,675.33	$ -	$ -	$ -	$ 768,675.33
Allendale	$ -	$ 219,336.00	$ -	$ -	$ 219,336.00
Anderson 1	$ 219,772.47	$ -	$ -	$ -	$ 219,772.47
Anderson 2	$ 106,188.14	$ -	$ -	$ -	$ 106,188.14
Anderson 3	$ 90,339.16	$ -	$ -	$ -	$ 90,339.16
Anderson 4	$ 76,075.08	$ -	$ -	$ -	$ 76,075.08
Anderson 5	$ 386,186.71	$ -	$ -	$ -	$ 386,186.71
Bamberg 1	$ -	$ 194,028.00	$ -	$ -	$ 194,028.00
Bamberg 2	$ -	$ 177,156.00	$ -	$ -	$ 177,156.00
Barnwell 19	$ -	$ 168,720.00	$ -	$ -	$ 168,720.00
Barnwell 29	$ -	$ 75,924.00	$ -	$ -	$ 75,924.00
Barnwell 45	$ 81,886.38	$ -	$ -	$ -	$ 81,886.38
Beaufort	$ 605,959.18	$ -	$ -	$ -	$ 605,959.18
Berkeley	$ -	$ 3,935,394.00	$ -	$ -	$ 3,935,394.00
Calhoun	$ -	$ -	$ 421,800.00	$ 50,000.00	$ 471,800.00
Charleston	$ 1,290,106.64	$ -	$ -	$ -	$ 1,290,106.64
Cherokee	$ 127,848.41	$ -	$ 674,880.00	$ 80,000.00	$ 882,728.41
Chester	$ 8,452.79	$ -	$ 843,600.00	$ 100,000.00	$ 952,052.79
Chesterfield	$ 114,640.93	$ 375,402.00	$ -	$ -	$ 490,042.93
Clarendon 1	$ -	$ 202,464.00	$ -	$ -	$ 202,464.00
Clarendon 2	$ -	$ 468,198.00	$ -	$ -	$ 468,198.00
Clarendon 3	$ -	$ 109,668.00	$ -	$ -	$ 109,668.00
Colleton	$ -	$ -	$ 1,096,680.00	$ 130,000.00	$ 1,226,680.00
Darlington	$ 271,017.49	$ -	$ 590,520.00	$ 70,000.00	$ 931,537.49
Dillon 3	$ -	$ 244,644.00	$ -	$ -	$ 244,644.00
Dillon 4	$ -	$ 780,330.00	$ -	$ -	$ 780,330.00
Dorchester 2	$ 498,186.14	$ -	$ -	$ -	$ 498,186.14
Dorchester 4	$ -	$ -	$ 506,160.00	$ 60,000.00	$ 566,160.00
Edgefield	$ 97,735.35	$ -	$ -	$ -	$ 97,735.35
Fairfield	$ -	$ -	$ 759,240.00	$ 90,000.00	$ 849,240.00
Florence 1	$ 305,356.94	$ 1,472,082.00	$ -	$ -	$ 1,777,438.94
Florence 2	$ -	$ 202,464.00	$ -	$ -	$ 202,464.00
Florence 3	$ -	$ 674,880.00	$ -	$ -	$ 674,880.00
Florence 4	$ -	$ 168,720.00	$ -	$ -	$ 168,720.00

District Name	EIA Half Day Program Allocations	CDEPP Allocations - Original Districts*	CDEPP Allocations - Expansion Districts - Per Pupil	CDEPP Allocations - Supplies and Materials**	Total Early Childhood Funding by District
Florence 5	$ -	**$ 185,592.00**	$ -	$ -	$ 185,592.00
Georgetown	$ 110,942.83	**$ -**	$ 843,600.00	$ 100,000.00	$ 1,054,542.83
Greenville	$ 1,996,970.97	**$ -**	$ -	$ -	$ 1,996,970.97
Greenwood 50	$ 302,715.44	**$ -**	$ -	$ -	$ 302,715.44
Greenwood 51	**$ -**	**$ -**	**$ 168,720.00**	**$ 20,000.00**	**$ 188,720.00**
Greenwood 52	$ 55,471.42	**$ -**	$ -	$ -	$ 55,471.42
Hampton 1	$ 28,528.16	**$ 421,800.00**	$ -	$ -	$ 450,328.16
Hampton 2	$ -	**$ 160,284.00**	$ -	$ -	$ 160,284.00
Horry	$ 1,301,729.23	**$ -**	$ -	$ -	$ 1,301,729.23
Jasper	$ -	**$ 687,534.00**	$ -	$ -	$ 687,534.00
Kershaw	$ 293,734.35	**$ -**	$ -	$ -	$ 293,734.35
Lancaster	$ 308,526.73	**$ -**	$ -	$ -	$ 308,526.73
Laurens 55	$ -	**$ 987,012.00**	$ -	$ -	$ 987,012.00
Laurens 56	$ 78,000.00	**$ 569,430.00**	$ -	$ -	$ 647,430.00
Lee	$ -	**$ 274,170.00**	$ -	$ -	$ 274,170.00
Lexington 1	$ 417,884.67	**$ -**	$ -	$ -	$ 417,884.67
Lexington 2	$ 313,281.43	**$ -**	$ -	$ -	$ 313,281.43
Lexington 3	**$ -**	**$ -**	**$ 421,800.00**	**$ 50,000.00**	**$ 471,800.00**
Lexington 4	$ -	**$ 814,074.00**	$ -	$ -	$ 814,074.00
Lexington 5	$ 232,451.65	**$ -**	$ -	$ -	$ 232,451.65
McCormick	$ -	**$ 88,578.00**	$ -	$ -	$ 88,578.00
Marion	$ -	**$ 1,041,846.00**	$ -	$ -	$ 1,041,846.00
Marlboro	$ 63,395.90	**$ 248,862.00**	$ -	$ -	$ 312,257.90
Newberry	**$ 67,622.30**	**$ -**	**$ 337,440.00**	**$ 40,000.00**	**$ 445,062.30**
Oconee	$ 295,319.25	**$ -**	$ -	$ -	$ 295,319.25
Orangeburg 3	$ -	**$ 577,866.00**	$ -	$ -	$ 577,866.00
Orangeburg 4	$ -	**$ 582,084.00**	$ -	$ -	$ 582,084.00
Orangeburg 5	$ -	**$ 1,877,010.00**	$ -	$ -	$ 1,877,010.00
Pickens	$ 434,790.24	**$ -**	$ -	$ -	$ 434,790.24
Richland 1	**$ 706,336.03**	**$ -**	**$ 1,265,400.00**	**$ 150,000.00**	**$ 2,121,736.03**
Richland 2	$ 568,449.94	**$ -**	$ -	$ -	$ 568,449.94
Saluda	$ -	**$ 278,388.00**	$ -	$ -	$ 278,388.00
Spartanburg 1	$ 121,508.82	**$ -**	$ -	$ -	$ 121,508.82
Spartanburg 2	$ 271,017.49	**$ -**	$ -	$ -	$ 271,017.49
Spartanburg 3	$ 76,603.38	**$ -**	$ -	$ -	$ 76,603.38
Spartanburg 4	$ 65,509.10	**$ -**	$ -	$ -	$ 65,509.10
Spartanburg 5	$ 185,433.02	**$ -**	$ -	$ -	$ 185,433.02

District Name	EIA Half Day Program Allocations	CDEPP Allocations - Original Districts*	CDEPP Allocations - Expansion Districts - Per Pupil	CDEPP Allocations - Supplies and Materials**	Total Early Childhood Funding by District
Spartanburg 6	$ 341,281.28	$ -	$ -	$ -	$ 341,281.28
Spartanburg 7	**$ 185,433.02**	**$ -**	**$ 1,181,040.00**	**$ 140,000.00**	**$ 1,506,473.02**
Sumter	**$ 505,054.03**	**$ -**	**$ 927,960.00**	**$ 110,000.00**	**$ 1,543,014.03**
Union	$ 143,169.08	**$ -**	$ -	$ -	$ 143,169.08
Williamsburg	$ -	**$ 839,382.00**	$ -	$ -	$ 839,382.00
York 1	$ 145,810.58	**$ -**	$ -	$ -	$ 145,810.58
York 2	$ 101,433.45	**$ -**	$ -	$ -	$ 101,433.45
York 3	$ 489,733.36	**$ -**	$ -	$ -	$ 489,733.36
York 4	$ 101,961.75	**$ -**	$ -	$ -	$ 101,961.75
Charter District	$ 155,319.96	**$ -**	$ -	$ -	$ 155,319.96
	$ 15,513,846.00	**$ 19,407,018.00**	$ 10,038,840.00	$ 1,190,000.00	$ 46,149,704.00

Source: Office of Finance, SC Department of Education to EOC on November 26, 2013.

* Trial districts noted in red; expansion districts in blue. Districts shaded were eligible but did not participate.

** $2500 was originally allocated to each school for supplies and materials. The remainder will be paid

Appendix D

FY 2013-14 FIRST STEPS 4K CLASSROOM ENROLLMENT CHART

	Program Name	City	County	DSS License Number	New CDEPP Provider for 2013-2014? (YES, NO)	Education Level of Teacher	Curriculum	# of Class-rooms	No. of Enrolled CDEPP Students (12.20.13)	Students Receiving Trans-portation (12.20.13)
1	ABC Academy	Saluda	Saluda	17080	No	2 Year Degree	High/Scope	1	16	6
2	Agapeland YEP Center	Marion	Marion	22871	No	2 Year Degree	Creative	1	12	12
3	Angel's Inn Daycare	Florence	Florence	18299	No	Pursuing 4 Year Degree	Creative	1	14	2
4	Antioch 3 & 4K Development Center	Florence	Florence	22987	Yes	Pursuing 4 Year Degree	Creative	1	17	0
5	Aye's Kangeroo Care	Eastover	Richland	16604	Yes	4 Year Degree	Creative	1	4	4
6	Bedford's Stay N Play	Barnwell	Barnwell	15911	No	4 Year Degree	Creative	1	20	20
7	Bamberg Head Start	Bamberg	Bamberg	Approval 585	No	4 Year Degree	High/Scope	1	20	20
8	Beginner's Paradise	Conway	Horry/Georgetown	16605	Yes	2 Year Degree	Creative	1	4	4
9	Benedict College Child Development Center	Columbia	Richland	17218	Yes	4 Year Degree	Creative	1	11	0
10	Bethel Learning Center	Columbia	Richland	16929	Yes	4 Year Degree	Creative	1	18	0
11	Big Blue Marble Academy #3	Leesville	Lexington	23226	Yes	4 Year Degree	Creative	1	15	3
12	Big Blue Marble Academy #4	Clinton	Laurens	23225	Yes	2 Year Degree	Creative	1	14	14
13	Bishopville Lee Child Care Center Inc.	Bishopville	Lee	14905	No	4 Year Degree	Creative	1	19	0
14	Brookland Baptist CDC	West Columbia	Lexington	17950	Yes	4 Year Degree	Creative	1	12	0
15	Candle Lakes Child Care	Blythewood	Richland	17810	Yes	Graduate Degree	Creative	1	7	0
16	Care-A-Lot Day Care Center	Dalzell	Sumter	22540	Yes	2 Year Degree	Creative	1	16	0
17	Children's Garden	Columbia	Richland	22260	Yes	2 Year Degree	Creative	1	14	0
18	Children's Keeper	Hampton	Hampton	18236	Yes	Pursuing 4 Year Degree	Creative	1	10	0
19	Children's World #5	Columbia	Richland	22103	Yes	4 Year Degree	Creative	1	20	0
20	Children's World #7	Columbia	Richland	22466	Yes	2 Year Degree	Creative	1	21	0
21	Choppee Head Start	Georgetown	Georgetown	23542	Yes	4 Year Degree	Creative	1	21	19
22	Clarian Place Child Care and Learning Center	Sumter	Sumter	23497	Yes	4 Year Degree	Creative	1	16	0
23	Crayons2Computers	Gafney	Cherokee	17389	Yes	Graduate Degree	Creative	1	11	0
24	Daniel Island Academy	Charleston	Berkeley	17851	Yes	4 Year Degree	Creative	1	2	0
25	Denmark Headstart	Denmark	Bamberg	Approval 381	No	Graduate Degree	High/Scope	1	20	20
26	Doodle Buzz Academy	Lake City	Williamsburg	17746	No	4 Year Degree/4 Year Degree	Creative	2	39	0
27	Excellent Learning Preschool, Inc.	Florence	Florence	17824	No	4 Year Degree/4 Year Degree	Creative	2	40	0
28	Foster's Childcare Center, Inc.	N. Charleston	Charleston	14606	No	Masters Degree	Creative	1	9	9
29	Gail and Terry Richardson Center for the Child	Florence	Florence	21675	No	4 Year Degree	Creative	1	12	0

	Program Name	City	County	DSS License Number	New CDEPP Provider for 2013-2014? (YES, NO)	Education Level of Teacher	Curriculum	# of Class-rooms	No. of Enrolled CDEPP Students (12.20.13)	Students Receiving Trans-portation (12.20.13)
30	Jack J. Hanna Academy and Childcare	Florence	Florence	17058	Yes	Graduate Degree	Creative	1	20	0
31	Jehovah MBC Christian and Academy School	Sumter	Sumter	17215	Yes	4 Year Degree	Creative	1	17	0
32	Kids Corner Children Academy	Florence	Florence	22267	No	Pursuing 4 Year Degree	Creative	1	24	0
33	Kids Unlimited of Prosperity	Prosperity	Newberry	15935	Yes	4 Year Degree	Creative	1	13	0
34	Kidz Will Be Kidz	Orangeburg	Orangeburg	17737	No	4 Year Degree	Creative	1	10	0
35	Lane Head Start (Waccamaw)	Lane	Williamsburg	Approval 105	Yes	2 Year Degree/2 Year Degree	Creative	2	43	40
37	LaPetite Academy 7514	Summerville	Berkeley	12862	Yes	4 Year Degree	Creative	1	12	0
38	LaPetite Academy 7504	Florence	Florence	13872	Yes	2 Year Degree	Creative	1	7	0
39	LaPetite Academy 7503	West Columbia	Lexington	12943	Yes	4 Year Degree	Creative	1	12	0
40	LaPetite Academy 7501	Columbia	Richland	13168	Yes	2 Year Degree	Creative	1	11	0
41	Legacy Christian Day School	Spartanburg	Spartanburg	23357	Yes	2 Year Degree	Creative	1	17	0
42	Little Miss Muffet Day Care	Kingstree	Williamsburg	12107	No	2 Year Degree	Creative	1	5	0
43	Little Promises	Mullins	Marion	17708	No	Pursuing 4 Year Degree	Creative	1	3	0
44	Little Treasures	Dillon	Dillon	21212	No	2 Year Degree	Creative	1	17	0
45	Little Smurf Child Development Center	Andrews	Georgetown	13577	No	2 Year Degree/2 Year Degree	Creative	2	33	30
46	Little Smurf Too	Kingstree	Williamsburg	23243	No	2 Year Degree	Creative	1	8	8
47	Mary's Little Lamb	Kingstree	Williamsburg	17036	No	Pursuing 4 Year Degree	Creative	1	6	6
48	McGills Bundles of Joy	Marion	Marion	17390	No	2 Year Degree	Creative	1	19	0
49	Mellon Patch	Hampton	Hampton	17754	No	2 Year Degree	Creative	1	7	0
50	Miracle Academy	Russellville	Berkeley	15805	Yes	4 Year Degree	Creative	1	13	0
51	Miss Eddie's Child Development Center	Spartanburg	Spartanburg	14716	Yes	4 Year Degree	Creative	1	8	0
52	Mon Aetna CEC	Union	Union	17662	Yes	4 Year Degree/2 Year Degree	Creative	2	26	0
53	Mon Dae Morning Child Care Center	Florence	Florence	17858	Yes	4 Year Degree	Creative	1	9	0
54	Mother Goose Day Care	Spartanburg	Spartanburg	16688	Yes	2 Year Degree	Creative	1	12	9
55	Myers's Nursery & Daycare	Hopkins	Richland	22802	Yes	4 Year Degree	Creative	1	7	0
56	Nesmith Community Day Care Center	Nesmith	Williamsburg	11158	No	2 Year Degree	Creative	1	10	10
57	Newberry Child Development Center	Newberry	Newberry	17838	Yes	4 Year Degree/2 Year Degree	Creative	2	26	8
58	New Jerusalem Baptist CDC	Barnwell	Barnwell	21410	No	4 Year Degree/4 Year Degree	Creative	2	22	23
59	Pawley's Island Civic Club CDC	Pawley's Island	Georgetown	12036	Yes	2 Year Degree	Creative	1	7	0
60	PCA Child Development Center (ZL Madden)	Spartanburg	Spartanburg	22566	Yes	4 Year Degree	Creative	1	11	7
61	Pee Dee CAP Headstart (Hamer Canaan)	Hamer	Dillon	Approval 317	No	4 Year Degree	Creative	1	7	7
62	Pee Dee CAP Headstart (Thelma Brown)	Florence	Florence	Approval 233	No	4 Year Degree	Creative	1	20	20

	Program Name	City	County	DSS License Number	New CDEPP Provider for 2013-2014? (YES, NO)	Education Level of Teacher	Curriculum	# of Class-rooms	No. of Enrolled CDEPP Students (12.20.13)	Students Receiving Trans-portation (12.20.13)
63	Playhouse CDC	Georgetown	Georgetown	21706	Yes	4 Year Degree	Creative	1	5	0
64	Pleasant Grove Academy	Marion	Marion	21029	No	Graduate Degree	Creative	1	14	14
65	Precious Little Angels	Pacolet	Spartanburg	17358	Yes	2 Year Degree	Creative	1	10	0
66	Progressive Learning Academy	Florence	Florence	22561	No	4 Year Degree	Creative	1	11	11
67	Prosperity Child Care	Lamar	Darlington	17426	No	4 Year Degree	Creative	1	20	11
68	Roadside Child Development Center	Darlington	Darlington	22159	Yes	4 Year Degree	Creative	1	8	0
69	Sampit Community Center	Georgetown	Georgetown	12597	Yes	2 Year Degree	Creative	1	3	0
70	SC State Child Development/Learning Center	Orangeburg	Orangeburg	Approval 366	No	4 Year Degree/4 Year Degree	High/Scope	2	13	0
71	Share HS-Starr Center	Starr	Anderson	Approval 922	Yes	4 Year Degree	Creative	1	22	0
72	Small Minds of Tomorrow	Georgetown	Georgetown	17786	Yes	2 Year Degree	Creative	1	19	14
73	Stepping Stones Child Care Center	Florence	Florence	19711	Yes	2 Year Degree	Creative	1	2	0
74	Stepping Stones Learning Academy, Inc	Laurens	Laurens	23333	Yes	2 Year Degree	Creative	1	14	4
75	St Matthews Head Start	Saint Matthews	Calhoun	Approval 138	Yes	2 Year Degree	Creative	1	17	17
76	The Montessori School of Pawley's Island	Pawley's Island	Georgetown	17378	Yes	4 Year Degree	Montesori	1	3	0
77	The Student Development Center	Chesnee	Cherokee	15926	Yes	4 Year Degree	Creative	1	5	0
78	The Sunshine House #16	Spartanburg	Spartanburg	15826	Yes	Pursuing 4 Year Degree	Creative	1	11	0
79	The Sunshine House #21	Columbia	Richland	15819	Yes	4 Year Degree	Creative	1	25	0
80	The Sunshine House #22	Columbia	Richland	15822	Yes	2 Year Degree	Creative	1	13	0
81	The Sunshine House #23	Columbia	Richland	15833	Yes	4 Year Degree	Creative	1	4	0
82	The Sunshine House #30	Florence	Florence	15828	No	4 Year Degree	Creative	2	32	0
83	The Sunshine House #134	Greenwood	Greenwood	17908	Yes	4 Year Degree	Creative	2	11	0
84	The Sunshine House #135	Greenwood	Greenwood	17925	Yes	4 Year Degree	Creative	1	19	0
85	Thornwell CDC	Clinton	Laurens	23194	No	4 Year Degree	Creative	2	38	14
86	Trinity Learning Center	Columbia	Richland	12127	Yes	Graduate Degree	Creative	2	1	0
88	Troy Johnson Learning Center	Mullins	Marion	12475	No	2 Year Degree	Creative	1	16	0
89	True Saints Christian Day Care and Learning Ctr	Hartsville	Darlington	23484	Yes	2 Year Degree	Creative	1	7	0
90	Wee Academy	Manning	Clarendon	29102	No	4 Year Degree	Creative	1	7	0
91	William Thomas Academy	Sumter	Sumter	22888	Yes	4 Year Degree/2 Year Degree	Creative	2	19	2
92	Wilson's Daycare and Learning Center	Kingstree	Williamsburg	17674	No	2 Year Degree	Creative	1	3	0
93	Wright Way Child Development Center	Eutawville	Orangeburg	21354	Yes	4 Year Degree	Creative	1	15	0
94	Zion Canaan Child Development Center	Timmonsville	Florence	16811	No	Graduate Degree	Creative	1	15	0
Source: Office of First Steps to School Readiness, December 20, 2013								105	1,318	388

Appendix E
South Carolina First Steps 4-Year-Old Kindergarten Expansion
2013-2014
Projected Expenditures

Projected Expenditures 2013-2014	
Recurring Funds	
Student Tuition (Figure represents current enrollment, plus expected growth of up to 15% post December 20, 2013	$6,364,962
Student Transportation (Figure represents current transportation, plus expected growth of up to 15% post December 20, 2013)	$271,600
Provider Support • Materials $740K (64 plus 15% projected growth) • Professional Development (Teachers, Directors, Aides, Parents) $500K • Data-driven instructional guidance (Frank Porter Graham, Teaching Strategies, NWEA) $250K • Mentoring - $364,903 • Accountability - $364,903	$2,219,806
Community Outreach (Figure reps current plus expected growth of up to 15% post December 20, 2013.)	$46,750
Administration (No growth anticipated in 2013-14.)	$70,194
Total Recurring	**$8,973,312**
NON-RECURRING	
Student Data-Base (build out of BRIDGES)	$875,000
Initial Training and Technical Assistance	$220,000
Total Non-Recurring	**$1,095,000**
TOTAL (Projected 1509 Children)	**$10,068,312**

Source: Office of First Steps to School Readiness, December 20, 2013

Appendix F
Providers Participating through the South Carolina Department of Education

School	License/ Approval Number Correct?	License Status	Deficiencies in Last 3 Years
Cherokee Trail Elem.	Yes	Regular	http://scchildcare.org/details.aspx?id=18417
Diamond Hill Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=18415
John C Calhoun Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=18414
Long Cane Primary	Yes	Regular	http://scchildcare.org/details.aspx?id=10475
Allendale Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18302
Fairfax Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18301
Richard Carroll Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=32417
Denmark-Olar Elem	Yes	Provisional	http://scchildcare.org/details.aspx?id=20191
Macedonia Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=20270
Kelly Edwards Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=20396
Berkeley Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=9922
Boulder Bluff Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=17739
Cainhoy Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18356
Cane Bay Elementary	22371	Regular	http://scchildcare.org/details.aspx?id=24278
College Park Elem.	Yes	Regular	http://scchildcare.org/details.aspx?id=20657
Cross Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=17670
Devon Forest Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=21573
Goose Creek Primary	No-18424	Regular	http://scchildcare.org/details.aspx?id=18317
Hanahan Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=21138
H.E. Bonner Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=20783
J.K. Gourdin Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=9999
Marrington Elem	No-21509	Regular	http://scchildcare.org/details.aspx?id=21325
Sangaree Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=21289
St. Stephen Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=18354
Westview Primary	Yes	Regular	http://scchildcare.org/details.aspx?id=21865
Whitesville Elem.	Yes	Regular	http://scchildcare.org/details.aspx?id=9873
St. Matthews K-8	Yes	Provisional	None
Sandy Run K-8	Yes	Provisional	None
B.D. Lee Elementary	No - 23577	Regular	None
Blacksburg Primary	No - 23579	Regular	None
Grassy Pond Elementary	No - 23576	Regular	None
Limestone Central Elementary	No - 23593	Regular	http://scchildcare.org/details.aspx?id=34666
Luther L. Vaughan Elementary	No - 23583	Regular	None
Chester Park Center for Literacy through Technology	Yes	Provisional	None
Chester Park Elementary School of Inquiry	Yes	Provisional	None
Great Falls Elementary	Yes	Provisional	None
Lewisville Elementary School	Yes	Provisional	None
Cheraw Primary	Yes	Regular	None
Petersburg Primary	Yes	Regular	None
Summerton EC Center	Yes	Regular	http://scchildcare.org/details.aspx?id=20423
Manning EC Center	Yes	Regular	http://scchildcare.org/details.aspx?id=10635

School	License/ Approval Number Correct?	License Status	Deficiencies in Last 3 Years
Walker Gamble Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=18433
Bells Elementary	Yes	Provisional	None
Black Street ECC	Yes	Provisional	http://scchildcare.org/details.aspx?id=34519
Cottageville Elementary	Yes	Provisional	http://scchildcare.org/details.aspx?id=34518
Hendersonville Elementary	No - 23537	Provisional	http://scchildcare.org/details.aspx?id=34516
Lamar Elementary	Yes	Provisional	None
Rosenwald Elementary/Middle	Yes	Provisional	None
St. John's Elementary	Yes	Provisional	None
Washington Street Elementary	Yes	Provisional	None
Latta EC Center	Yes	Provisional	http://scchildcare.org/details.aspx?id=20118
Lake View Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18368
East Elementary	Yes	Regular	None
South Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18311
Stewart Heights Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=18310
Clay Hill Elementary	Yes	Provisional	http://scchildcare.org/details.aspx?id=34663
Harleyville Elementary	Yes	Provisional	http://scchildcare.org/details.aspx?id=34654
Williams Memorial Elementary	Yes	Provisional	None
Fairfield Elementary	Yes	Provisional	None
Fairfield Magnet School	Yes	Provisional	None
Geiger Elementary	Yes	Provisional	None
Kelly Miller Elementary	Yes	Provisional	None
McCrorey Liston School of Technology	Yes	Provisional	None
R.N. Beck Learning	Yes	Regular	http://scchildcare.org/details.aspx?id=5819
Carver Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=20297
Dewey Carter Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=20299
The Child Dev Ctr at Alfred Rush	Yes	Provisional	http://scchildcare.org/details.aspx?id=34562
Lester Elementary	Yes	Regular	None
North Vista Elementary	Yes	Regular	None
Lake City Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=20308
Lake City High	Yes	Regular	http://scchildcare.org/details.aspx?id=20732
J.C. Lynch Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=20158
Main Street Elementary	Yes	Regular	None
Olanta Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=20306
Scranton Elementary	Yes	Regular	None
Brockington Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=18300
Johnsonville Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=18313
Kensington Elementary	Yes	Regular	None
Maryville Elementary	Yes	Regular	None
Pleasant Hill Elementary	Yes	Provisional	None
Sampit Elementary	Yes	Provisional	None
Waccamaw Elementary	Yes	Regular	None
Ware Shoals Primary	No - 23516	Provisional	None
Fennell Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=10545
Varnville Primary	Yes	Regular	http://scchildcare.org/details.aspx?id=10304

School	License/ Approval Number Correct?	License Status	Deficiencies in Last 3 Years
Estill Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18286
Hardeeville Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=11101
Ridgeland Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18413
E.B. Morse Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18690
Ford Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=9929
Gray Court-Owings Elem.	Yes	Regular	http://scchildcare.org/details.aspx?id=20539
Hickory Tavern Elem.	Yes	Regular	None
Laurens Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18692
Waterloo Elementary	Yes	Regular	None
M.S. Bailey CD Ctr.	Yes	Regular	None
Bishopville Primary	Yes	Regular	http://scchildcare.org/details.aspx?id=18336
Lower Lee Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18335
West Lee Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=18334
Batesburg-Leesville Primary	No - 23568	Provisional	None
Lexington Four ECC	Yes	Regular	http://scchildcare.org/details.aspx?id=26170
Mullins EC Center	Yes	Regular	http://scchildcare.org/details.aspx?id=18316
Easterling Primary School	Yes	Regular	None
Britton's Neck Elementary	No-22780	Regular	None
Bennettsville Primary	Yes	Regular	http://scchildcare.org/details.aspx?id=31520
McCormick Elem.	Yes	Regular	http://scchildcare.org/details.aspx?id=21084
Boundary Street Elementary	Yes	Provisional	None
Gallman Elementary	Yes	Provisional	None
Newberry Elementary	No - 23525	Provisional	None
Pomaria Garmany Elementary	Yes	Provisional	None
Elloree Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18642
Holly Hill Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18513
St James-Gaillard	Yes	Regular	http://scchildcare.org/details.aspx?id=18450
Vance-Providence	Yes	Regular	http://scchildcare.org/details.aspx?id=18432
Edisto Primary	Yes	Regular	http://scchildcare.org/details.aspx?id=18536
Hunter-Kinard Tyler	Yes	Regular	http://scchildcare.org/details.aspx?id=18559
Lockett Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18558
Bethune-Bowman	Yes	Regular	http://scchildcare.org/details.aspx?id=18449
Brookdale Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=18451
Dover Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18500
Marshall Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18514
Mellichamp Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=18483
Rivelon Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18479
Sheridan Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18482
Whittaker Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=18480
A C Moore Elementary	Yes	Provisional	None
Arden Elementary	Yes	Provisional	None
Carolina School for Inquiry	Yes	Provisional	None
Gadsden Elementary	Yes	Provisional	None
Hopkins Elementary	Yes	Provisional	None

School	License/ Approval Number Correct?	License Status	Deficiencies in Last 3 Years
John P. Thomas Elementary	Yes	Provisional	None
South Kilbourne Elementary	Yes	Provisional	None
Watkins Nance Elementary	Yes	Provisional	None
Hollywood Elementary	Yes	Regular	http://scchildcare.org/details.aspx?id=23270
Saluda Primary	Yes	Regular	http://scchildcare.org/details.aspx?id=23298
Cleveland Academy of Leadership	No - 23603	Provisional	None
Early Learning Center at Park Hills	No - 23605	Provisional	None
E.P. Todd School	No - 23602	Provisional	None
Cherryvale Elementary	Yes	Provisional	None
Crosswell Drive Elementary	In Progress	In Progress	N/A
F. J. DeLaine Elementary	Yes	Provisional	None
Kingsbury Elementary	In Progress	In Progress	N/A
Manchester Elementary	In Progress	In Progress	N/A
R.E. Davis Elementary	Yes	Provisional	None
Wilder Elementary	Yes	Provisional	None
Willow Drive Elementary	In Progress	In Progress	N/A
Hemingway Elementary	No-22128	Regular	http://scchildcare.org/details.aspx?id=22880
D.P. Cooper Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=21584
Greeleyville Elem	Yes	Regular	http://scchildcare.org/details.aspx?id=20708
W.M. Anderson Pri	Yes	Regular	None

Early Childhood Success Ctr.	Closed		
Williamsburg Cty Magnet	This License # belonged to St. Mark Elementary and was made inactive on 8/2/2011. Application for Williamsburg Cty Magnet made inactive 12/20/2013.		

Providers Participating through Office of First Steps

Provider	License/ Approval Number Correct?	License Status	Deficiencies in Last 3 Years	ABC Level
ABC Academy	Yes	Regular	http://scchildcare.org/details.aspx?id=6485	B+
Agapeland YEP Center	Yes	Regular	None	B+
Angel's Inn Daycare	Yes	Regular	http://scchildcare.org/details.aspx?id=18077	B
Antioch 3 & 4K Development Center	Yes	Regular	http://scchildcare.org/details.aspx?id=31500	B
Aye's Kangeroo Care	Yes	Regular	http://scchildcare.org/details.aspx?id=4283	B
Bedford's Stay N Play	Yes	Regular	http://scchildcare.org/details.aspx?id=861	B
Bamberg Head Start	Yes	Regular	http://scchildcare.org/details.aspx?id=8768	Can't verify in ABC
Beginner's Paradise	No - 16055	Regular	None	B
Benedict College Child Development Center	Yes	Regular	http://scchildcare.org/details.aspx?id=6958	A+
Bethel Learning Center	Yes	Regular	http://scchildcare.org/details.aspx?id=4777	B
Big Blue Marble Academy #3	Yes	Regular	http://scchildcare.org/details.aspx?id=32722	B+
Big Blue Marble Academy #4	Yes	Regular	None	C
Bishopville Lee Child Care Center Inc.	Yes	Regular	http://scchildcare.org/details.aspx?id=2460	B+
Brookland Baptist CDC	Yes	Regular	http://scchildcare.org/details.aspx?id=11490	B+
Candle Lakes Child Care	Yes	Regular	http://scchildcare.org/details.aspx?id=10568	B+
Care-A-Lot Day Care Center	Yes	Regular	http://scchildcare.org/details.aspx?id=25064	B
Children's Garden	Yes	Regular	http://scchildcare.org/details.aspx?id=24846	A+
Children's Keeper	Yes	Regular	http://scchildcare.org/details.aspx?id=17918	B
Children's World #5	Yes	Regular	http://scchildcare.org/details.aspx?id=23767	B
Children's World #7	Yes	Regular	http://scchildcare.org/details.aspx?id=25452	C
Choppee Head Start	Yes	Regular	None	Can't verify in ABC
Clarian Place Child Care and Learning Center	Yes	Regular	http://scchildcare.org/details.aspx?id=34131	C
Crayons2Computers	Yes	Regular	http://scchildcare.org/details.aspx?id=7988	B
Daniel Island Academy	Yes	Regular	None	A+
Denmark Headstart	Yes	Regular	http://scchildcare.org/details.aspx?id=672	Can't verify in ABC
Doodle Buzz Academy	Yes	Regular	None	B+
Excellent Learning Preschool, Inc.	Yes	Regular	None	B
Foster's Childcare Center, Inc.	Yes	Regular	http://scchildcare.org/details.aspx?id=360	B
Gail and Terry Richardson Center for the Child	Yes	Regular	None	B+
Jack J. Hanna Academy and Childcare	Yes	Regular	http://scchildcare.org/details.aspx?id=6426	C
Jehovah MBC Christian and Academy School	Yes	Regular	http://scchildcare.org/details.aspx?id=6953	B
Kids Corner Children Academy	Yes	Regular	http://scchildcare.org/details.aspx?id=22370	B+
Kids Unlimited of Prosperity	Yes	Regular	http://scchildcare.org/details.aspx?id=2562	B
Kidz Will Be Kidz	Yes	Regular	http://scchildcare.org/details.aspx?id=10108	B
Lane Head Start (Waccamaw)	Yes	Regular	None	B
LaPetite Academy 7514	Yes	Regular	http://scchildcare.org/details.aspx?id=11504	B
LaPetite Academy 7504	Yes	Regular	http://scchildcare.org/details.aspx?id=2002	B
LaPetite Academy 7503	Yes	Regular	http://scchildcare.org/details.aspx?id=197	B+

Provider	License/ Approval Number Correct?	License Status	Deficiencies in Last 3 Years	ABC Level
LaPetite Academy 7501	Yes	Regular	http://scchildcare.org/details.aspx?id=1948	B
Legacy Christian Day School	Yes	Regular	http://scchildcare.org/details.aspx?id=33522	C
Little Miss Muffet Day Care	Yes	Regular	http://scchildcare.org/details.aspx?id=1886	B+
Little Promises	Yes	Regular	http://scchildcare.org/details.aspx?id=9957	B
Little Treasures	Yes	Regular	http://scchildcare.org/details.aspx?id=20330	B
Little Smurf Child Development Center	Yes	Regular	http://scchildcare.org/details.aspx?id=1979	B+
Little Smurf Too	Yes	Regular	None	B+
McGills Bundles of Joy	Yes	Regular	http://scchildcare.org/details.aspx?id=7991	B
Mellon Patch	Yes	Provisional	http://scchildcare.org/details.aspx?id=10215	B
Miracle Academy	Yes	Regular	http://scchildcare.org/details.aspx?id=619	B+
Miss Eddie's Child Development Center	Yes	Regular	None	A+
Mon Aetna CEC	Yes	Regular	http://scchildcare.org/details.aspx?id=9717	B
Mon Dae Morning Child Care Center	Yes	Regular	None	B
Mother Goose Day Care	Yes	Regular	None	B
Myers's Nursery & Daycare	Yes	Regular	http://scchildcare.org/details.aspx?id=29742	B
Nesmith Community Day Care Center	Yes	Regular	None	B+
Newberry Child Development Center	Yes	Regular	http://scchildcare.org/details.aspx?id=10857	A
New Jerusalem Baptist CDC	Yes	Regular	http://scchildcare.org/details.aspx?id=20986	B+
Pawley's Island Civic Club CDC	Yes	Regular	None	B+
PCA Child Development Center (ZL Madden)	Yes	Regular	http://scchildcare.org/details.aspx?id=24462	B
Pee Dee CAP Headstart (Hamer Canaan)	Yes	Regular	None	B
Pee Dee CAP Headstart (Thelma Brown)	Yes	Regular	http://scchildcare.org/details.aspx?id=2384	A
Playhouse CDC	Yes	Regular	http://scchildcare.org/details.aspx?id=21650	B
Pleasant Grove Academy	Yes	Regular	http://scchildcare.org/details.aspx?id=20107	B
Precious Little Angels	Yes	Regular	http://scchildcare.org/details.aspx?id=7752	B
Prosperity Child Care	Yes	Regular	http://scchildcare.org/details.aspx?id=8201	B+
Roadside Child Development Center	Yes	Regular	http://scchildcare.org/details.aspx?id=24066	C
Sampit Community Center	Yes	Regular	http://scchildcare.org/details.aspx?id=2398	B
SC State Child Development/Learning Center	Yes	Regular	http://scchildcare.org/details.aspx?id=821	A+
Share HS-Starr Center	Yes	Regular	http://scchildcare.org/details.aspx?id=10361	Can't verify in ABC
Small Minds of Tomorrow	Yes	Regular	http://scchildcare.org/details.aspx?id=10407	B
Stepping Stones Child Care Center	No - 17911	Regular	None	B+
Stepping Stones Learning Academy, Inc	Yes	Regular	http://scchildcare.org/details.aspx?id=33433	B+
St Matthews Head Start	Yes	Regular	http://scchildcare.org/details.aspx?id=690	Can't verify in ABC
The Montessori School of Pawley's Island	Yes	Regular	None	C
The Student Development Center	Yes	Regular	http://scchildcare.org/details.aspx?id=2549	B

Provider	License/ Approval Number Correct?	License Status	Deficiencies in Last 3 Years	ABC Level
The Sunshine House #16	Yes	Regular	http://scchildcare.org/details.aspx?id=2337	B+
The Sunshine House #21	Yes	Regular	http://scchildcare.org/details.aspx?id=2333	B
The Sunshine House #22	Yes	Regular	http://scchildcare.org/details.aspx?id=2335	B
The Sunshine House #23	Yes	Regular	http://scchildcare.org/details.aspx?id=2339	B
The Sunshine House #30	Yes	Regular	http://scchildcare.org/details.aspx?id=2338	B
The Sunshine House #134	Yes	Regular	http://scchildcare.org/details.aspx?id=11208	C
The Sunshine House #135	Yes	Regular	http://scchildcare.org/details.aspx?id=11303	B
Thornwell CDC	Yes	Regular	None	Can't verify in ABC
Trinity Learning Center	Yes	Regular	http://scchildcare.org/details.aspx?id=1888	Can't verify in ABC
Troy Johnson Learning Center	Yes	Regular	http://scchildcare.org/details.aspx?id=1901	B+
True Saints Christian Day Care and Learning Ctr	Yes	Regular	http://scchildcare.org/details.aspx?id=34190	C
Wee Academy	No - 15870	Regular	http://scchildcare.org/details.aspx?id=2354	B+
William Thomas Academy	Yes	Provisional	http://scchildcare.org/details.aspx?id=29864	C
Wilson's Daycare and Learning Center	No - 17974	Regular	http://scchildcare.org/details.aspx?id=17597	B
Wright Way Child Development Center	Yes	Provisional	http://scchildcare.org/details.aspx?id=20417	B
Zion Canaan Child Development Center	Yes	Regular	http://scchildcare.org/details.aspx?id=5573	B

Appendix G
Academic Performance of CDEPP Students Compared to Other Subgroups

Table A-1. Number and Percent of Students at Each PASS Performance Level in Grade 3 in Reading.

Achievement Level	Non-CDEPP Students in SC	Non-CDEPP Subsidized Meal Students in SC	Non-CDEPP Students in CDEPP Districts	Non-CDEPP Subsidized Meal Students in CDEPP Districts	CDEPP Students
	Cohort 1 – Grade 3 (Spring 2011)				
Exemplary	27,884 (56)	12,410 (42)	2,960 (47)	1,656 (38)	896 (41)
Met	12,438 (25)	8,751 (30)	1,756 (28)	1,353 (31)	695 (32)
Not Met	9,825 (20)	8,063 (28)	1,550 (25)	1,332 (31)	581 (27)
	Cohort 2 – Grade 3 (Spring 2012)				
Exemplary	28,904 (59)	12,898 (46)	3,079 (50)	1,674 (39)	1,634 (45)
Met	10,478 (22)	7,613 (27)	1,576 (25)	1,230 (29)	1,028 (29)
Not Met	9,256 (19)	7,714 (27)	1,544 (25)	1,360 (32)	934 (26)
	Cohort 3 – Grade 3 (Spring 2013)				
Exemplary	28,993 (59)	13,071 (45)	3,008 (51)	1,527 (39)	1,647 (46)
Met	12,271 (25)	8,996 (31)	1,624 (28)	1,270 (33)	1,167 (32)
Not Met	8,287 (17)	6,893 (24)	1,258 (21)	1,072 (28)	777 (22)

Table A-2. Number and Percent of Students at Each PASS Performance Level in Grades 4 and 5 in Reading.

Achievement Level	Non-CDEPP Students in SC	Non-CDEPP Subsidized Meal Students in SC	Non-CDEPP Students in CDEPP Districts	Non-CDEPP Subsidized Meal Students in CDEPP Districts	CDEPP Students
	Cohort 1 – Grade 4 (Spring 2012)				
Exemplary	20,316 (43)	8,001 (29)	2,054 (35)	1,021 (25)	604 (29)
Met	16,785 (36)	11,416 (41)	2,142 (37)	1,672 (41)	891 (42)
Not Met	9,959 (21)	8,365 (30)	1,595 (28)	1,403 (34)	609 (29)
	Cohort 2 – Grade 4 (Spring 2013)				
Exemplary	19,288 (42)	7,371 (28)	1,952 (35)	953 (25)	997 (28)
Met	17,293 (38)	11,420 (43)	2,136 (38)	1,578 (41)	1,571 (45)
Not Met	9,308 (20)	7,749 (29)	1,502 (27)	1,306 (34)	965 (27)
	Cohort 1 – Grade 5 (Spring 2013)				
Exemplary	17,977 (39)	7,133 (26)	1,806 (33)	902 (23)	538 (26)
Met	19,821 (43)	13,172 (49)	2,487 (45)	1,907 (49)	1,065 (51)
Not Met	8,023 (18)	6,666 (25)	1,222 (22)	1,066 (28)	474 (23)

Table A-3. Number and Percent of Students at Each PASS Performance Level in Grade 3 in Mathematics.

Achievement Level	Non-CDEPP Students in SC	Non-CDEPP Subsidized Meal Students in SC	Non-CDEPP Students in CDEPP Districts	Non-CDEPP Subsidized Meal Students in CDEPP Districts	CDEPP Students
	Cohort 1 – Grade 3 (Spring 2011)				
Exemplary	22,055 (44)	9,002 (31)	2,224 (35)	1,126 (26)	615 (28)
Met	13,697 (27)	8,788 (30)	1,771 (28)	1,280 (29)	678 (31)
Not Met	14,456 (29)	11,476 (39)	2,280 (36)	1,944 (45)	880 (40)
	Cohort 2 – Grade 3 (Spring 2012)				
Exemplary	21,597 (44)	8,718 (31)	2,194 (35)	1,099 (26)	1,104 (31)
Met	14,250 (29)	9,133 (32)	1,849 (30)	1,321 (31)	1,177 (33)
Not Met	12,849 (26)	10,409 (37)	2,159 (35)	1,846 (43)	1,316 (37)
	Cohort 3 – Grade 3 (Spring 2013)				
Exemplary	21,438 (43)	8,699 (30)	2,092 (35)	950 (25)	1,055 (29)
Met	13,657 (28)	8,611 (30)	1,634 (28)	1,115 (29)	1,083 (30)
Not Met	14,505 (29)	11,669 (40)	2,168 (37)	1,847 (47)	1,453 (41)

Table A-4. Number and Percent of Students at Each PASS Performance Level in Grades 4 and 5 in Mathematics.

Achievement Level	Non-CDEPP Students in SC	Non-CDEPP Subsidized Meal Students in SC	Non-CDEPP Students in CDEPP Districts	Non-CDEPP Subsidized Meal Students in CDEPP Districts	CDEPP Students
	Cohort 1 – Grade 4 (Spring 2012)				
Exemplary	19,500 (41)	7,787 (28)	1,893 (33)	968 (24)	518 (25)
Met	17,936 (38)	12,015 (43)	2,305 (40)	1,730 (42)	911 (43)
Not Met	9,628 (20)	7,983 (29)	1,593 (28)	1,398 (34)	675 (32)
	Cohort 2 – Grade 4 (Spring 2013)				
Exemplary	19,174 (42)	7,354 (28)	1,817 (33)	849 (22)	946 (27)
Met	17,984 (39)	11,899 (45)	2,297 (41)	1,695 (44)	1,628 (46)
Not Met	8,731 (19)	7,288 (28)	1,474 (26)	1,292 (34)	960 (27)
	Cohort 1 – Grade 5 (Spring 2013)				
Exemplary	17,501 (38)	6,963 (26)	1,607 (29)	797 (21)	538 (26)
Met	17,869 (39)	11,549 (43)	2,321 (42)	1,724 (44)	915 (44)
Not Met	10,456 (23)	8,466 (31)	1,588 (29)	1,355 (35)	624 (30)

Appendix H
PASS Performance, Over Time

Percent of Grade 3 Students who Scored Met or Exemplary on PASS, Reading & Mathematics

Trial and Plaintiff CDEPP Participating Districts

	READING					MATHEMATICS				
District	**2009**	**2010**	**2011**	**2012**	**2013**	**2009**	**2010**	**2011**	**2012**	**2013**
Abbeville	86.5	84.8	88.3	89.6	86.3	84.0	78.9	86.6	86.8	81.8
Allendale	45.7	48.8	60.5	45.4	61.1	32.5	29.3	44.2	28.7	44.2
Bamberg 1	79.3	75.0	68.4	72.8	68.8	60.8	70.3	64.2	69.3	54.8
Bamberg 2	68.2	58.3	50.0	37.5	77.3	36.4	24.6	19.3	15.0	43.2
Barnwell 19	57.1	78.6	56.8	64.1	64.8	37.0	46.7	32.4	31.4	35.2
Barnwell 29	70.6	81.8	79.7	73.6	71.9	53.3	80.6	65.2	67.9	45.3
Berkeley	80.0	84.6	82.8	85.1	86.2	67.0	73.9	74.2	76.0	68.7
Chesterfield	73.8	70.3	77.5	75.6	80.0	66.0	62.6	73.8	73.0	72.1
Clarendon 1	70.1	85.5	81.7	78.8	95.8	39.6	71.7	67.2	74.6	73.2
Clarendon 2	75.0	77.7	80.9	82.2	75.5	57.0	75.9	72.8	81.7	61.4
Clarendon 3	80.5	80.7	78.5	87.5	96.8	75.2	65.7	61.6	80.3	83.7
Dillon 1	65.1	83.3	64.1	.	.	42.8	68.0	65.6	.	.
Dillon 2	73.1	76.2	75.7	.	.	62.5	68.4	70.5	.	.
Dillon 3	75.4	78.2	75.2	73.8	79.6	67.7	70.4	69.6	68.0	67.4
Dillon 4	.	.	.	66.6	82.2	.	.	.	60.3	65.0
Florence 1	78.4	85.0	83.7	83.5	86.6	64.2	67.5	71.8	72.8	72.1
Florence 2	73.2	84.5	80.2	79.3	78.6	50.0	63.8	58.3	55.7	58.9
Florence 3	69.7	65.2	60.3	68.2	68.2	53.0	53.6	49.0	56.5	51.6
Florence 4	55.0	54.2	31.7	27.3	45.8	30.4	28.2	13.4	13.6	7.6
Florence 5	83.5	87.9	81.8	85.4	87.1	76.3	81.5	74.2	76.2	61.1
Hampton 1	71.7	79.1	72.7	73.0	76.4	59.9	66.5	70.1	65.7	68.2
Hampton 2	44.7	57.0	52.2	69.5	72.0	36.9	29.1	35.5	35.6	50.9
Jasper	65.3	53.1	52.6	59.9	61.5	32.0	30.2	30.9	38.9	32.7
Laurens 55	82.3	74.1	77.1	78.4	76.8	70.4	62.3	64.6	68.8	61.0
Laurens 56	76.8	81.2	75.3	75.9	81.5	56.2	69.0	66.2	69.7	74.1
Lee	48.2	67.2	59.7	56.7	55.0	29.1	38.0	42.6	29.8	28.9
Lexington 4	65.6	69.2	65.8	63.3	71.5	52.6	55.9	55.2	51.3	51.7

	READING					MATHEMATICS				
District	**2009**	**2010**	**2011**	**2012**	**2013**	**2009**	**2010**	**2011**	**2012**	**2013**
McCormick	76.6	80.7	82.2	75.8	78.4	66.1	73.3	67.8	54.5	37.7
Marion 1	68.5	67.4	63.7	61.2	.	50.3	54.8	45.3	42.0	.
Marion 2	47.5	66.4	65.2	69.8	.	32.6	39.7	52.2	43.4	.
Marion 7	80.5	75.0	73.8	77.5	.	47.7	46.4	64.3	67.4	.
Marion 10	.	.	.	.	66.0	.	.	.	.	40.1
Marlboro	61.1	59.9	64.3	59.7	63.1	49.0	53.2	56.8	52.2	49.1
Orangeburg 3	55.9	72.7	67.1	65.6	76.1	42.0	49.6	39.9	53.7	62.2
Orangeburg 4	50.9	58.3	58.4	51.7	60.6	45.1	51.6	46.0	48.4	43.5
Orangeburg 5	74.7	70.6	75.2	72.3	70.3	48.8	54.4	53.8	59.8	54.0
Williamsburg	70.6	67.6	66.5	67.8	72.2	54.8	51.2	45.5	50.4	53.4
State	78.0	80.7	80.0	80.3	82.8	67.0	70.0	70.4	72.5	69.7

Percent of Grade 3 Students who Scored Met or Exemplary on PASS, Reading & Mathematics

Non-CDEPP Participating Districts

	READING					MATHEMATICS				
District	**2009**	**2010**	**2011**	**2012**	**2013**	**2009**	**2010**	**2011**	**2012**	**2013**
Aiken	79.7	81.7	79.8	79.1	81.9	68.8	63.1	63.7	69.3	63.8
Anderson 1	89.4	88.5	89.3	88.3	92.1	76.6	82.4	84.6	83.8	83.8
Anderson 2	88.6	87.2	85.6	87.8	88.8	79.4	82.5	79.7	80.6	74.2
Anderson 3	75.9	78.3	77.3	79.4	79.6	51.9	60.0	65.0	64.9	69.5
Anderson 4	85.1	88.1	91.1	88.9	92.0	78.0	79.0	75.7	75.6	77.1
Anderson 5	84.4	82.9	82.9	81.7	83.6	72.5	72.7	71.6	77.2	74.6
Barnwell 45	57.7	76.0	69.5	60.5	68.5	42.4	67.2	62.1	52.8	56.8
Beaufort	73.4	77.4	78.1	79.8	80.9	59.7	64.4	69.2	71.8	69.6
Calhoun	86.4	80.5	80.8	84.0	85.9	72.6	75.7	65.6	74.8	58.6
Charleston	80.0	81.0	79.7	81.5	84.3	70.2	70.1	69.7	74.0	70.1
Cherokee	72.5	71.6	69.1	69.3	73.0	66.7	67.7	64.4	62.0	62.6
Chester	67.5	71.5	67.2	71.9	73.6	55.7	57.3	57.0	58.0	54.3
Colleton	67.5	72.0	78.8	71.7	69.9	53.3	58.1	60.8	67.2	54.9
Darlington	72.5	79.6	75.8	81.8	81.7	63.0	68.2	69.7	75.7	67.8
Dorchester 2	85.4	89.4	88.2	87.2	88.4	76.6	83.0	84.1	84.8	83.6
Dorchester 4	72.2	83.7	81.7	82.1	79.6	65.7	75.2	76.2	71.7	69.8
Edgefield	80.9	80.3	76.2	73.8	84.0	59.4	56.8	61.0	64.5	64.4
Fairfield	56.5	61.9	71.6	75.3	73.4	43.2	42.8	55.8	62.6	55.1
Georgetown	75.2	81.2	80.1	80.6	81.1	67.7	70.0	67.0	72.1	66.2
Greenville	78.3	83.4	83.7	83.3	86.0	70.2	74.6	75.9	77.3	75.5
Greenwood 50	70.5	78.5	78.5	77.9	81.0	61.3	67.5	68.5	72.9	66.5
Greenwood 51	85.1	75.0	91.2	88.7	83.1	71.8	82.4	83.0	81.6	62.4
Greenwood 52	91.6	95.5	88.6	86.5	85.0	84.7	91.0	87.0	83.8	78.3
Horry	84.0	83.4	84.3	84.7	87.8	73.6	77.0	76.4	79.7	76.4
Kershaw	81.4	80.9	81.0	80.0	84.7	71.2	71.2	71.9	68.9	70.5
Lancaster	73.8	82.6	79.0	78.6	81.5	67.0	73.6	69.7	70.9	67.2
Lexington 1	84.1	87.6	85.5	85.3	87.7	78.2	76.8	76.1	79.3	73.8
Lexington 2	73.9	77.7	76.5	75.8	75.5	64.5	67.5	63.0	64.4	63.5
Lexington 3	70.3	75.5	75.2	73.5	79.2	59.2	62.9	69.5	66.6	67.8

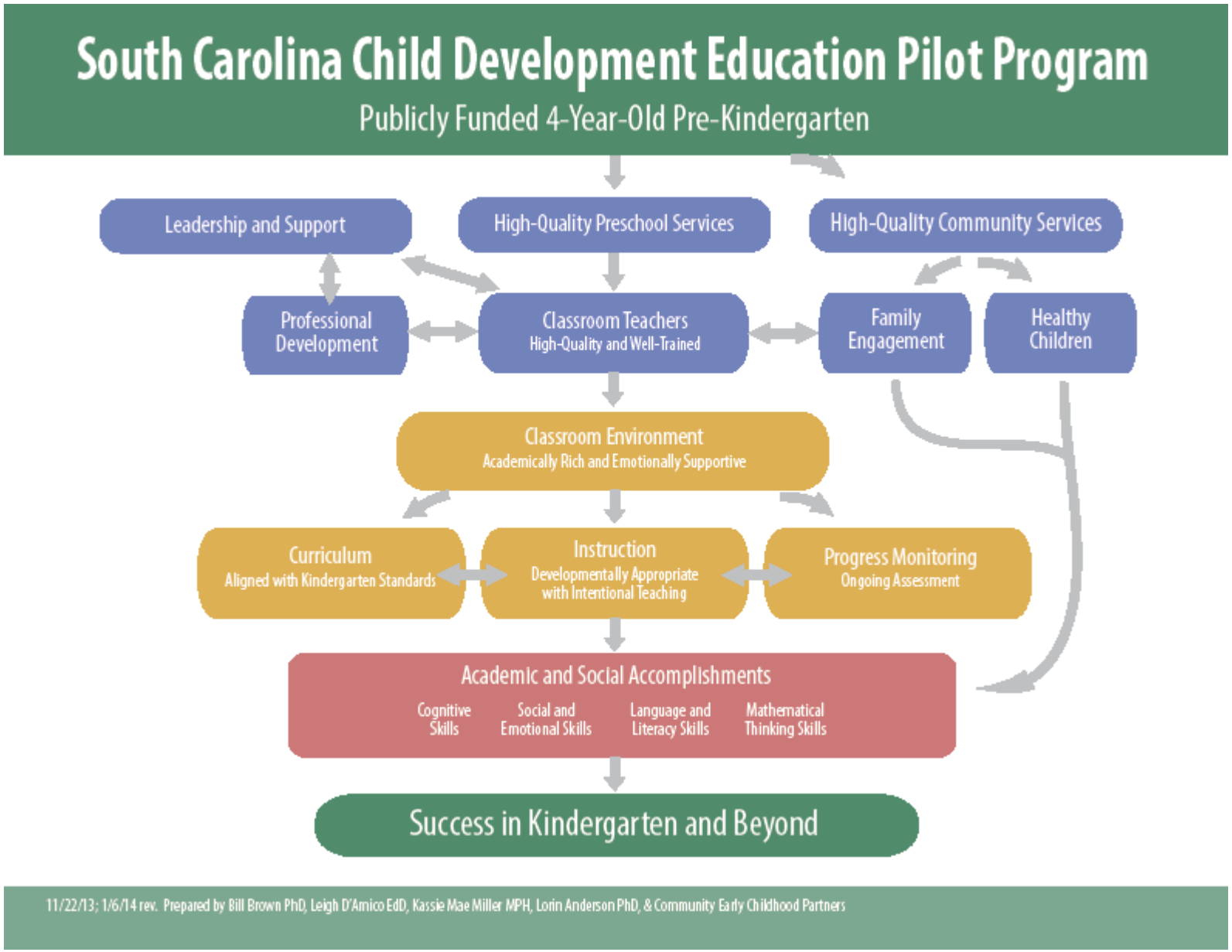
	READING					MATHEMATICS				
District	**2009**	**2010**	**2011**	**2012**	**2013**	**2009**	**2010**	**2011**	**2012**	**2013**
Lexington 5	85.6	88.4	87.4	86.3	88.7	81.2	82.3	80.1	82.3	80.9
Newberry	71.7	70.2	71.7	77.3	75.0	59.5	60.1	71.7	77.8	67.8
Oconee	81.5	81.3	79.6	80.1	84.0	68.2	68.9	72.6	69.2	68.2
Pickens	84.4	86.6	86.3	88.0	87.6	74.6	79.8	78.8	79.2	77.2
Richland 1	73.0	76.4	74.6	73.0	78.3	53.6	60.4	60.5	62.9	61.5
Richland 2	79.6	85.0	82.4	79.2	85.5	67.7	71.1	68.4	68.2	69.7
Saluda*	72.4	69.5	77.1	77.5	82.7	65.6	67.0	67.5	72.8	71.0
Spartanburg 1	85.3	89.0	92.8	88.1	92.8	76.4	81.5	87.9	86.7	86.2
Spartanburg 2	79.5	83.1	85.1	85.8	88.2	74.5	77.5	78.4	80.4	77.6
Spartanburg 3	76.5	79.4	81.8	79.9	80.0	67.0	77.1	74.2	77.6	73.2
Spartanburg 4	76.5	75.4	82.0	82.9	82.3	71.0	74.0	74.1	73.4	75.3
Spartanburg 5	85.1	82.7	82.4	83.3	84.7	73.7	75.5	76.4	73.9	75.9
Spartanburg 6	79.8	78.3	77.0	83.2	80.5	64.5	72.6	71.9	75.0	66.6
Spartanburg 7	70.1	77.5	73.0	69.3	78.9	58.1	64.1	65.5	62.3	68.7
Sumter	.	.	.	79.5	80.1	.	.	.	71.1	66.4
Sumter 2	77.6	80.8	74.0	.	.	64.7	72.7	65.8	.	.
Sumter 17	77.1	78.3	77.5	.	.	65.3	60.7	63.4	.	.
Union	71.0	77.0	85.7	82.0	79.7	62.4	68.7	75.1	70.6	68.6
York 1	73.5	76.7	71.8	75.1	76.4	63.3	63.2	60.7	69.2	69.4
York 2	86.7	87.7	86.1	90.3	94.0	81.9	82.8	84.5	89.0	89.0
York 3	80.2	79.8	78.7	80.5	80.9	73.2	72.0	73.3	75.7	70.2
York 4	92.2	90.6	92.5	93.6	93.7	86.9	84.5	86.1	88.7	85.3
SC Public School Charter District	74.0	72.5	73.7	78.4	76.5	51.4	52.2	54.5	55.3	56.6
State	78.0	80.7	80.0	80.3	82.8	67.0	70.0	70.4	72.5	69.7

*Saluda first participated in CDEPP in 2010-11

Appendix I
Early Childhood Education Stakeholder Meeting Participants
November 1, 2013

Dr. Lorin Anderson, Distinguished Professor Emeritus, University of South Carolina
Dr. Kevin Andrews, EOC
Lillian Atkins, Lexington School District 4, Early Childhood Center
Melanie Barton, EOC
Leigh Bollick, DSS Early Care and Education
Dr. Bill Brown, University of South Carolina
Floyd Creech, Florence School District 1
Dr. Leigh D'Amico, Office of Program Evaluation, University of South Carolina
Penny Danielson, SC Department of Education
Mary Lynn Diggs, Head Start Collaboration
Pam Dinkins, Central Carolina Technical College
Dr. Christine DiStefano, University of South Carolina
Dewayne Frederick, Beaufort Jasper EOC Head Start
Rachael Fulmer, State Budget Division
Dr. Susan Gehlmann, Berkeley County Schools, Director Elementary Education
Dr. Fred Greer, University of South Carolina
Betty Harrington, Clarendon School District 2, Manning Early Childhood Center
Ashley Hutchinson, Beaufort County Schools
Debbie Hyler, The School Foundation, Florence School District 1
Mellanie Jinnette, SC Department of Education
Kassie Mae Miller, Office of Program Evaluation, University of South Carolina
Jenny May, Children's Law Center, University of South Carolina
Katy Sides, Institute for Child Success
Dr. Reginald Williams, South Carolina State University
Dr. Dan Wuori, Office of First Steps
Dana Yow, EOC

APPENDIX J


South Carolina Child Development Education Pilot Program
Publicly Funded 4-Year-Old Pre-Kindergarten
Leadership and Support
High-Quality Preschool Services
High-Quality Community Services
Professional Development
Classroom Teachers
High-Quality and Well-Trained
Family Engagement
Healthy Children
Classroom Environment
Academically Rich and Emotionally Supportive
Curriculum
Aligned with Kindergarten Standards
Instruction
Developmentally Appropriate with Intentional Teaching
Progress Monitoring
Ongoing Assessment
Academic and Social Accomplishments
Cognitive Skills
Social and Emotional Skills
Language and Literacy Skills
Mathematical Thinking Skills
Success in Kindergarten and Beyond
11/22/13; 1/6/14 rev. Prepared by Bill Brown PhD, Leigh D'Amico EdD, Kassie Mae Miller MPH, Lorin Anderson PhD, & Community Early Childhood Partners

APPENDIX K

SC EDUCATION OVERSIGHT COMMITTEE

December 4, 2013

Dear Early Childhood Education Stakeholder:

I am pleased to send you a draft of the conceptual framework for the South Carolina Child Development Education Pilot Program (CDEPP). In computer software terms, you are receiving what might be called "Version 3.0." This version was derived from the goal statements that the stakeholders who participated in the November 1 meeting provided and was informed by research and writing in the field. I want to thank Lorin Anderson, Bill Brown, Leigh D'Amico and Kassie Mae Miller for their work on this project.

I would suggest that you examine the framework from the bottom up. The overall goal of the program as determined by the stakeholders on November 1 is ***Success in Kindergarten and Beyond***. In order to accomplish this goal, students must possess a set of academic and social skills (***Academic and Social Accomplishments***). This requires a strong ***Curriculum*** (one which is aligned with kindergarten standards), ***Instruction*** that is developmentally appropriate and coupled with intentional teaching, and ***Progress Monitoring*** (i.e., ongoing assessment). These three interrelated concepts must exist within a ***Classroom Environment*** that is academically rich and emotionally supportive. The design and operation of such an environment requires excellent ***Classroom Teachers*** who receive appropriate ***Professional Development***. But, as we all know, schools cannot do it alone. There needs to be ***High-Quality Community Services*** which focus on ***Family Engagement*** and ***Healthy Children***. And, as the arrows indicate, these services also have an impact on ***Academic and Social Accomplishments***.

To simplify the framework, key words and phrases are used rather than elaborate descriptions. To avoid any confusion about the meaning of these words and phrases, a Glossary is provided. The Glossary describes in more detail the intended meaning of each concept. Our intent with the glossary is to promote common definitions and shared understandings that might support early childhood practitioners, administrators, and advocates communications in pursuit of high-quality learning experiences for young children and their families. Many of the definitions employed are from well-known scholars in the field or by example and are not intended to be exhaustive. Following the Glossary is a set of references for those needing additional information.

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EXECUTIVE DIRECTOR

APPENDIX L

South Carolina Child Development Education Pilot Program (CDEPP) Conceptual Framework Definitions[1]

Academic and Social Accomplishments—The *American Heritage Dictionary* (Second College Edition) defines accomplishment as "something completed successfully; achievement." Academic and social accomplishments include: (a) cognitive skills; (b) social emotional skills; (c) language and literacy skills; and (d) mathematical thinking skills. Critical cognitive skills include but are not necessarily limited to: memory, attention, ability to connect experiences, classification, use of symbols, curiosity and motivation, and meaningful engagement and persistence. Critical social and emotional skills include but are not necessarily limited to the ability to delay gratification, positive interactions and relationships with adults and peers, self-regulation of emotions and behavior, and the ability to follow reasonable and age appropriate limits and adult requests. Critical language and literacy skills include but are not necessarily limited to communication of needs and preferences, listening, receptive and expressive vocabulary, phonological awareness, alphabetic principle and knowledge, print and book knowledge, prewriting and writing skills, and reading comprehension. Critical mathematical thinking skills include but are not necessarily limited to: knowledge of patterns, ability to compare and measure, recognition and use of numbers and number concepts, and basic mathematical operations.

Classroom Environments—Classrooms consist of materials and arrangements to support and promote teaching and learning opportunities for young children. Critical aspects include but are not necessarily limited to: (a) space and furnishings (e.g., learning centers, chairs, tables, open areas); (b) materials and equipment to promote children's meaningful engagement (e.g., writing and art materials, books, blocks, puzzles, electronic tablets, smart boards); and (c) schedules of individual, small group, and whole group learning activities to promote children's meaningful engagement. In addition, intentional teaching to promote positive and educative interactions with and among children and teachers is a critical part of classroom environments (see Instruction and Intentional Teaching).

Classroom Teachers—Typically, early childhood classrooms have a "lead" teacher who is responsible for establishing and maintaining classrooms environments, implementing curriculum, and organizing and supervising other adults who are teaching in classrooms. Nevertheless, the designation of teachers as a generic term refers to any adult who participates in classroom activities and who provides teaching and learning opportunities to children (e.g., assistant teachers, parent and community volunteers, speech and language therapists).

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[1] **Our intent with the glossary is to promote common definitions and shared understandings that might support early childhood practitioners, administrators, and advocates communications in pursuit of high-quality learning experiences for young children and their families. Many of the definitions employed are from well-know scholars in the field or by example and are not intended to be exhaustive.**

Curriculum—Curriculum may be defined ". . . as an organized and sequenced set of content to be taught: It is the 'what to teach' . . ." (Noonan & McCormick, 2014). In addition, it may be defined as a process to determine what should be taught to whom and when. Some educators also define teaching strategies and tactics or the "how to teach" as part of curriculum (see Instruction). Hence, curriculum may be defined as the content and teaching techniques used to promote high-quality teaching and learning opportunities to enhance young children's development and learning. Preschool curriculum should be aligned with kindergarten and early elementary standards to enhance transition from preschool to kindergarten and future school success.

Developmentally Appropriate Practice—The National Association for the Education of Children (NAEYC) has propagated developmentally appropriate practices (DAP) for early childhood educators for over 25 years (Copple, & Bredekamp, 2009). In the last revision of DAP the basic principles increased from two to three. The three interrelated cardinal principles of DAP are: (a) age appropriateness (i.e., for almost all children in most circumstances child development is *an age-related sequence of acquisition and maintenance of skills, abilities, and dispositions*); (b) individual appropriateness (i.e., despite age-related normative developmental sequences *differences among children in their development and learning result in varying rates of acquisition of skills, abilities, and dispositions, which is also known as individual differences*); and (c) cultural appropriateness (i.e., within American culture, we have *many cultures in our nation that might affect the delivery, use, and quality of early childhood and community services*). Moreover, researchers have demonstrated that culture influences children's development and learning and should be addressed as needed when providing high-quality early childhood services (Tharp & Dalton, 2007).

Family Engagement—Supporting and working with families has been a long-standing tradition with early childhood professionals (Copple & Bredekamp, 2009; Sandall, McLean, & Smith, 2000). Activities to promote *families engagement and meaningful participation in early childhood education and services* include but are not necessarily limited to: (a) dissemination of relevant information; (b) linkage of families to needed medical, social, and community services; (c) parent education about strategies and tactics to promote and support children's development and learning; (d) ongoing assessment information related to children's progress while receiving early childhood services; and (e) formal and informal meetings and events that highlight participation of families in early childhood services. Family engagement activities may range from relatively passive ones such as sending relevant information home from school to proactive strategies such as coaching of critical parental skills that are related to better development and learning. For example, some parents may benefit greatly from learning basic behavioral guidance strategies to enhance parent-child interactions (e.g., ignoring minor misbehavior, "catching a

child being good," teaching self regulation to their children). School personnel have a responsibility to promote and support families' meaningful engagement in community schools.

Healthy Children—Promoting children's health is fundamental to their development and learning. Critical elements that promote and support young children's health during early childhood include but are not necessarily limited to: (a) prenatal and perinatal care; (b) access to and regular use of pediatric care (i.e., "medical home"); (c) immunizations; (d) screenings for medical and developmental problems (e.g., hearing and vision screenings, dental screenings, developmental screenings); and (e) access to nutritious food and physical activity.

High-Quality Community Services—Families access and use of high-quality community services can contribute greatly to high-quality preschool services and future child outcomes, especially for high-needs families (e.g., living in poverty, dual language learners, children with medical and developmental difficulties). Unfortunately, often medical, social, and community services, are not co-located in or well linked with preschool programs. For many high needs families the fact that services are dispersed across communities creates challenges of access and timely use of needed community services. Critical community services include but are not necessarily limited to: (a) prenatal and pediatric care; (b) enrollment in social service programs such as TANF, MEDICAID, and SNAP; (c) mental health services; (d) responsive services for children and families who experience child and spousal maltreatment; (e) drug and alcohol treatment; (f) parent education such as how to nurture and better care for their children; and (g) before and after school child care. Given the lack of connection between school and many other community services, school personnel should promote and support families' linkage to and use of needed community services.

High-Quality Preschool Services—High-quality preschool services include but are not necessarily limited to: (a) well-trained teachers supported by effective professional development; (b) engagement and participation of families in schools; (c) academically rich and emotionally supportive classrooms; (c) curricula that are well-aligned with kindergarten and early elementary standards and learning progressions; (d) developmentally appropriate instruction with intentional teaching of critical skills; (e) ongoing assessment that is formative for instruction and monitoring children's progress; and (f) critical academic and social accomplishments that promote and support success in kindergarten and beyond.

Instruction—Instruction consists of the strategies, tactics, and methods teachers' employ to actively engage children in the process of learning. Hence, instructional procedures are the "*how to teach*" component of curricula. Metaphorically, teachers are similar to movie directors with responsibilities that include (a) arranging classroom environments ("arranging sets and scenes"); (b) implementing instructional activities with intentional teaching ("using a movie script and planning and implementing film scenes"); and (c) providing positive and supportive feedback

and monitoring progress to promote children's learning ("collaborating with actors and film technicians to achieve successful scenes and a great movie"). Instruction may be performed with individuals, small groups, and in whole groups of children and in different circumstances (e.g., center time, outside play, snack time, transition to bus, table top activities, large group). Instruction may range from relatively simple embedded questions about personal information (e.g., "How old are you?," "When is your birthday?") to systematic presentation of critical information to be learned (e.g., games focused on rhyming and alliteration, dialogic and shared reading, counting and measuring activities). Instruction is both incidental at "teachable moments" (e.g., pointing out a distinctive feature of a square, teacher naming an unknown object and then asking a child to expressively label the object) and teacher planned with high-quality teaching and learning opportunities for children (e.g., dialogic reading of stories focused on "Wh" questions, counting the number of days in a month).

Intentional Teaching—To promote teachers employment of efficient and effective teaching and learning strategies and tactics, Ann Epstein (2006) introduced the term and concept of intentional teaching with a monograph published by the National Association for the Education of Young Children (NAEYC). Whereas Epstein recognized young children learn in varied contexts and circumstances with and without teachers, she strongly recommended that effective teachers be proactive in thoughtful planning and implementation of high-quality teaching and learning activities and experiences throughout the preschool day. She defined intentional teaching as "Teachers act with specific outcomes or goals in mind for children's development and learning." (p. 1) and further noted that an intentional teacher " . . . acts with knowledge and purpose to ensure that young children acquire the knowledge and skills (content) they need to succeed in school and in life." (p. 1). To promote efficient and effective learning with young children, especially children living in poverty, dual language learners, and with medical and developmental difficulties, intentional teaching ought to be implemented regularly with children.

Leadership—The *American Heritage Dictionary* (Second College Edition) defines leadership as "The capacity or ability to lead." In the field of early care and education, leadership may be exhibited by various individuals including but not necessarily limited to elected officials, agency administrators, principals, coordinators, teachers, parents, faculty at 2- and 4-year Institutions of Higher Education, advocates, and interested laypersons. Historically, many educators have considered leaders to be elected officials, key administrative personnel in local and state agencies, and site-level administrators such as principals and coordinators. Whereas these individuals can and do have essential leadership roles, other models of leadership often stress collaborative leadership among members of teams within organizations (cf. Metz, Halle, Bartley, & Blasberg, 2013). For example, clearly elected officials, critical agency personnel, and well-informed advocates provide leadership in establishing legislation and regulations to support policies and practices in our communities. And site-level administrators also have a critical role in implementing and supporting policies and practices at the local level. Nevertheless, the best-

written legislation with clear regulations and high-quality site-level supervision does not necessarily change day-to-day practices for children and families. Contemporary conceptual frameworks such as a bioecological model (cf. Bronfenbrenner & Morris, 2006) and implementation science (cf. Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005) are systems approaches that emphasize collaboration among professionals and consumers to establish and maintain services that can be evaluated, and when indicated, changed to support continued improvement in services. Hence, an effective site-based implementation team at a child development program might include but not be limited to an administrator, teacher representatives, parents, and related service personnel who plan, implement, and evaluate services with the goal of promoting effective child and family outcomes. Leadership "ought" be shared among members of an implementation team, especially when their roles and responsibilities are explicitly defined and publicly reviewed. When clear responsibilities are not delineated one is at risk for the following scenario, "When everyone is responsible, no one is responsible" (anonymous). As an example of a team at a child development program, a local administrator might convene the team and make known what resources are available for professional development (e.g., inservice schedules, funding for trainings, accessible expertise). Teachers and parents on the team might develop a survey to determine practitioners and parents' needs for knowledge and skills in language development and early literacy. Once teachers and parents needs have been decided, the team can identify who will provide the professional development (e.g., accomplished teachers or language specialists, outside consultants), content (e.g., vocabulary development, alphabetic principle and knowledge), and methods of delivery (e.g., webinars, onsite consultation with constructive feedback on performance), and evaluation (e.g., review of teachers and parents' implementation of teaching skills; consumer satisfaction ratings from administrators, teachers, and parents). Models of shared leadership promote and support collaboration, which include various individuals on teams and not merely "top down leadership" from key agency administrators or supervisors (cf. Metz et al., 2013). Moreover, implementation teams can share explicit roles and responsibilities based on their interests and skills, and whenever possible, develop and nurture their capacity to lead (cf. Wesley & Buysse, 2006).

Professional Development—The field of early childhood is characterized by multiple service sectors with different funding streams allocated for well-defined services. Common sectors serving many preschool children are: (a) state-funded pre-kindergarten services; (b) federally funded Head Start Programs; (c) federally and state-funded childcare; (d) federally and state-funded BabyNET Early Intervention Services; (e) for-profit childcare; and (f) private and faith-based preschools. In recent years, given that each sector has different standards and regulations for teachers, the term professional development (PD) has been confusing for many practitioners and has become a generic term that includes both professionals (i.e., academic qualifications and other criteria from a licensing body) and non-professionals (i.e., training related to and required by the sector employers). Other terms that are used commonly along with professional

development have been: (a) workforce development; (b) teacher education; (c) preservice and inservice preparation; and (d) continuing education. We adopted the broad definition proposed by Buysse, Winton, and Rous (2009) that defined PD as "facilitated teaching and learning experiences that are transactional and designed to support the acquisition of professional knowledge, skill, and dispositions as well as the application of this knowledge in practice." Winton (2010) further delineated three fundamental components of the professional development: "1) characteristics and contexts of learners and the children they serve and the PD providers (the *who*); 2) the content focus of professional development (*what* professionals should know and be able to do); and 3) the organization and facilitation of learning experiences (the *how*, or the methods and approaches used to implement PD.' (p. 115). Historically, most professional development has been workshops and presentations in which participants listen to information ("sit and get"). Two contemporary forms of professional development, especially for promoting effective practices include (a) on-site collaborative consultation with coaching to support teachers practices (Dunst & Trivette, 2009); and (b) establishment of communities of practice focused on evidence-based approaches to early childhood services (Wesley & Buysse, 2006). Regardless of the methods of delivery, we believe that efficient and effective professional development should be based on teachers' needs for evidence-based practices to enhance preschool services, especially those teaching practices related to acquisition of critical skills, abilities, and dispositions.

Progress Monitoring— McLean (2004) defined assessment as " . . . a generic term that refers to the process of gathering information for the purpose of makings decisions" (p. 13). Assessment in the broadest sense has several purposes including (a) identification and screening; (b) eligibility and diagnosis; (c) child program planning; (d) child progress monitoring; and (e) accountability and program evaluation (Brown & D'Amico, 2012; Snow & Van Hemel, 2008). Assessment methods can be as simple as observing children or asking a single discrete question or as complex as assigning a standardized series of complicated tasks to observe and record children's performance to compare with same-aged peers (i.e., standardized norm referenced protocols). One type of assessment, ***progress monitoring*** is an assessment of children's learning across time. Wolery (2004) delineated three essential purposes for progress monitoring: (a) to validate conclusions from initial assessments; (b) to record and evaluate child progress across time; and (c) to determine whether instruction should be continued or revised. Progress monitoring for instruction is typically performed by classroom teachers and should be feasible for planning and, when indicated, adjusting instruction with young children.

Publically funded 4-year-old Prekindergarten—Across the United States during the last three decades, the majority of states have expanded the quantity and quality of prekindergarten services, especially for 4- and 5-year-old children not yet in kindergarten and high needs children and families (e.g., living in poverty, dual language learners, medical and developmental difficulties) (Barnett, Carolan, Fitzgerald, & Squires, 2012). Publically funded preschool services

in South Carolina include but are not necessarily limited to: (a) state-funded Education Improvement Act (EIA), federally funded Title I, and district funded prekindergartens; (b) state-funded CDEPP prekindergartens; (c) federally funded Head Start Programs; and (d) state and federally funded Department of Social Services (SC DSS) Division of Early Care and Education for infants, toddlers, and preschoolers. ***Although we believe that the conceptual framework applies to early childhood programs in general, for the purposes of Child Development Education Pilot Program (CDEPP) evaluation the phrase "publically funded prekindergarten" refers to those 4-year-old prekindergarten services funded through the South Carolina Child Development Education Pilot Program that are located in public schools, private preschools and childcare centers, and Head Start Programs.*** Although focused on CDEPP, the CDEPP Evaluation and evaluators will, to the greatest extent possible, collaborate with and be informed by services and evaluations of other relevant publically and privately funded prekindergarten programs in South Carolina.

Success in Kindergarten and Early Elementary—We differentiate *success* in kindergarten and early elementary from kindergarten and school *readiness*. Kindergarten and school readiness consist of a one time "snapshot" of a child's current skills, abilities, and dispositions. Prekindergarten and kindergarten entry assessment is helpful in determining which children need individualized and well-targeted educational services. Nevertheless, a one time "snapshot" is too circumscribed for children's learning that occurs across time. Success is a more dynamic concept that focuses on ongoing teaching and learning opportunities that move children along a continuum of critical skills, abilities, and dispositions needed for school and life preparation. Success in kindergarten and beyond ought to include engaged teachers, children, and families with high-quality instruction and progress monitoring across time.

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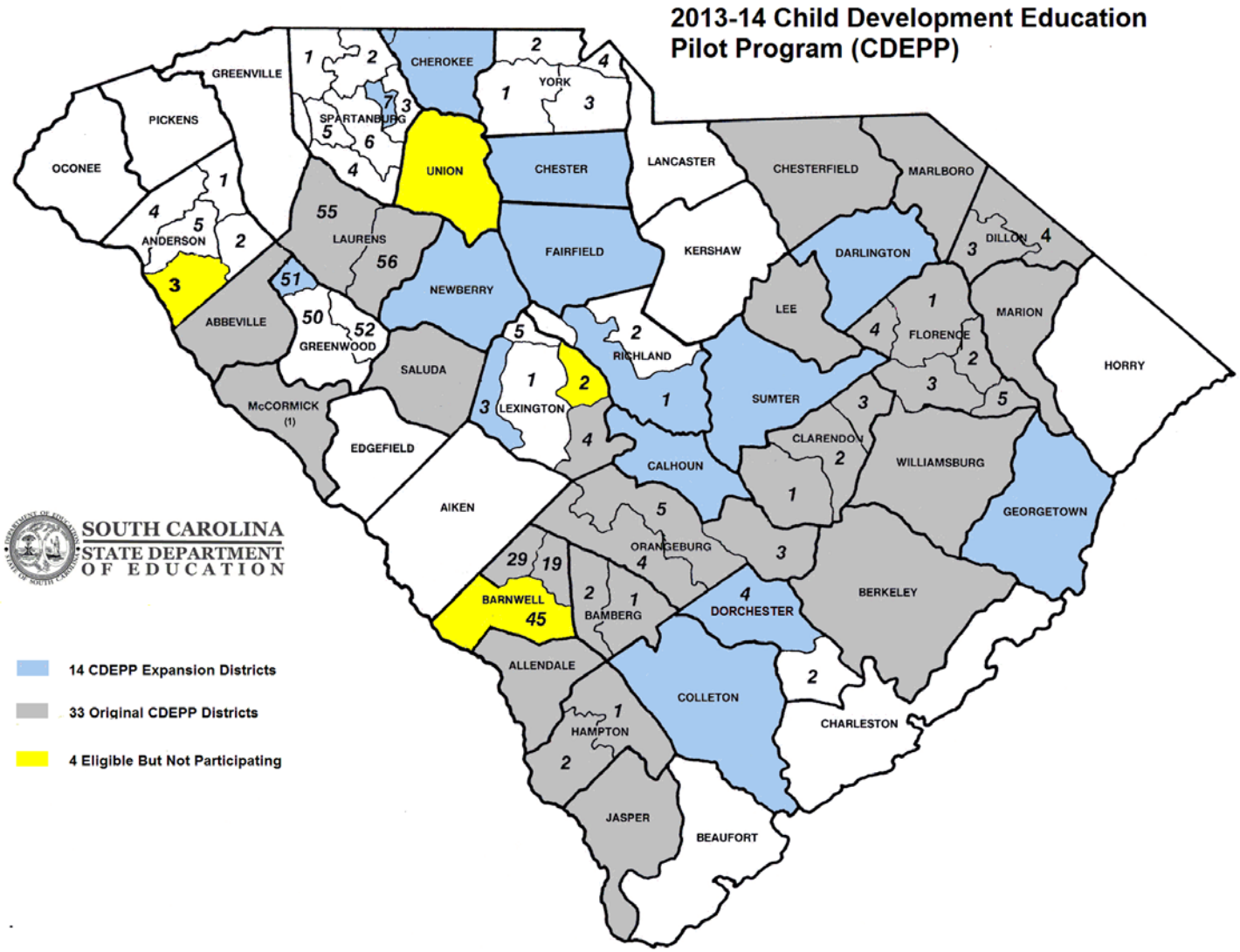
Appendix M
Map of CDEPP Districts



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