JLARC
JOINT LEGISLATIVE AUDIT AND REVIEW COMMISSION

REPORT TO THE
GOVERNOR AND THE GENERAL ASSEMBLY OF VIRGINIA

Strategies to Promote Third Grade Reading Performance in Virginia

SENATE DOCUMENT NO. 7
COMMONWEALTH OF VIRGINIA
RICHMOND

NOVEMBER 2011

In Brief

SJR 31 from the 2010 General Assembly directed JLARC to study ways to promote early reading proficiency and comprehension among third grade students in Virginia.

Student pass rates on the third grade reading Standards of Learning test have increased substantially over the past decade, but fall short of the State's aspirational goal of a 95 percent statewide pass rate. Socioeconomic factors such as economic status, disability, and race have a considerable impact on pass rates.

Key practices, such as small-group differentiated instruction, provide the foundation for a good classroom reading program, and the vast majority of divisions report already using these practices. Teachers are the critical factor in determining the effectiveness of a classroom reading program and need to be both well trained and well supported. Key supports include literacy coaches, reading specialists, and additional staff to assist in the classroom. Some students may need assistance in addition to the classroom reading program, and Response to Intervention is a recommended strategy for dealing with reading difficulties.

Options for the State and localities to improve early reading performance focus on providing training and support for teachers, supporting effective intervention programs, and maintaining an environment that supports early literacy.

Members of the Joint Legislative Audit and Review Commission

Chair
Senator Charles J. Colgan

Vice-Chair
Delegate John M. O'Bannon III

Delegate David B. Albo
Delegate M. Kirkland Cox
Senator R. Edward Houck
Senator Janet D. Howell
Delegate Johnny S. Joannou
Delegate S. Chris Jones
Delegate Harvey B. Morgan
Senator Thomas K. Norment, Jr.
Delegate Robert D. Orrock, Sr.
Delegate Clarence E. Phillips
Delegate Lacey E. Putney
Senator Walter A. Stosch

Walter J. Kucharski, Auditor of Public Accounts

Director
Glen S. Tittermary

JLARC Staff for This Report

Bob Rotz, Division Chief
Kimberly Sarte, Project Leader
Greg Rest, Chief Methodologist
Paula Lambert, Senior Legislative Analyst

This report is available on the JLARC website at http://jlarc.virginia.gov

Copyright 2011, Commonwealth of Virginia.

COMMONWEALTH of VIRGINIA

Glen S. Tittermary
Director

Joint Legislative Audit and Review Commission
Suite 1100, General Assembly Building, Capitol Square
Richmond, Virginia 23219

(804) 786-1258

November 21, 2011

The Honorable Charles J. Colgan
Chair
Joint Legislative Audit and Review Commission
General Assembly Building
Richmond, Virginia 23219

Dear Senator Colgan:

Pursuant to Senate Joint Resolution 31 of the 2010 General Assembly, JLARC staff conducted a study of ways to promote and ensure early reading proficiency and comprehension among third graders in the public schools. This final report was briefed to the Commission and authorized for printing on September 12, 2011.

I would like to thank the Department of Education staff for their assistance during this study. I would also like to thank the superintendents, reading coordinators, elementary school principals, and third grade teachers who were interviewed, participated in a school division survey of early reading programs, or enabled staff visits to third grade classrooms across the state. Further, I would like to thank early literacy experts at Virginia's universities who shared their time and expertise in issues related to early reading.

Sincerely,

Glen S. Tittermary
Director

GST/mle

Table of Contents

JLARC Report Summary i

1 Introduction 1

Early Reading Achievement Is Important to Ensure Later Academic Success 2

State Support Is Provided for Early Literacy in Virginia 5

Recent Performance by Virginia and U.S. Elementary and Secondary School Students in Reading 10

2 State SOL Tests Are Used to Assess Third Grade Reading Performance 19

Overview of Third Grade Reading SOL Tests 19

Pass Rates on Third Grade Reading SOL Increased Substantially but Are Below State Goal 22

Pass and Advanced Levels for the 2010 SOL Appear to Reasonably Approximate Grade-Level Performance 25

Number of Correct Responses Needed to Pass the SOL Can Change From Year to Year 29

Number of Subjects Tested in Third Grade Is a Concern 36

3 Third Grade Reading Performance in Virginia School Divisions 39

Divisions Were Ranked Based on Their Pass Rate and a Comparison of That Rate to Their "Predicted" Rate 40

Use of Models to Predict Pass Rates Helps Account for the Impact of Socioeconomic Factors 42

Larger Divisions View the 95 Percent Pass Rate Goal as Problematic More Often Than Smaller Divisions 46

Intergrade Cooperation, Teacher Quality, and Student Views of Reading May Impact Pass Rates 48

4 Key Strategies and Practices for the Classroom Reading Program 51

A Classroom Reading Program Should Cover Six Key Components 52

Key Aspects of an Effective Classroom Reading Block 58

Other Key Practices Can Improve the Success of an Elementary Reading Program 68

5 Well-Trained and Well-Supported Teachers Are Critical for an Effective Reading Program 73

Effective, Well-Trained Teachers Are Critical 74

Support for Early Elementary Classroom Teachers Is Critical 88

6 Key Strategies and Best Practices for Increasing Reading Proficiency of Struggling Readers 97

Response to Intervention Is an Overall Strategy to Deal With Reading Difficulties 97

Key Strategies and Best Practices for Different Types of Struggling Readers 104

7 Options to Promote Third Grade Reading Performance 115

Maintain Early Elementary Teachers Well Trained in Reading Instruction 116

Provide Support for Early Elementary Classroom Teachers in Reading Instruction 119

Support Well-Run, Effective Intervention Programs 124

Maintain an Academic Environment Supportive of Early Literacy 125

Summary of Options 126

JLARC Recommendations 129

Appendixes

A: Study Mandate 131

B: Research Activities and Methods 133

C: 2010 Third Grade Reading SOL Released Test 145

D: Statistical Analysis Performed on the SOL Student-Level Data 177

E: Division-Level Pass Rates and Rankings, 2010 Third Grade Reading SOL Test 189

F: Bibliography 193

G: Agency Response 197

JLARC Report Summary:

Strategies to Promote Third Grade Reading Performance in Virginia

Key Findings

- Student pass rates on the third grade reading Standards of Learning (SOL) test have increased substantially over the past decade. The statewide pass rate was 83 percent in 2010. The feasibility of achieving a 95 percent pass rate goal statewide is questionable. (Chapters 2 and 3)

- Socioeconomic factors such as economic status, disability status, and race have a considerable impact upon third grade reading pass rates. Some school divisions perform better than is predicted when socioeconomic factors are taken into account, potentially indicating their use of successful instructional practices. (Chapter 3)

- The literature identifies a number of key elements, such as the use of small-group differentiated instruction, which provide the foundation for a good reading program. The vast majority of Virginia's school divisions report incorporating these elements into their classroom reading program. (Chapter 4)

- Teachers, who are most critical to the effectiveness of a classroom reading program, need to be well supported in the effort to increase student reading skills. Valuable supports include ongoing professional development, literacy coaches, reading specialists, and additional staff to assist in the classroom. (Chapter 5)

- Response to Intervention is an overall recommended strategy for dealing with reading difficulties, and additional strategies are available for different categories of struggling readers. (Chapter 6)

- There are several options for improving reading performance in the early grades that could be implemented at the State and local level. These options focus on providing reading-related training and support for early elementary teachers, supporting effective intervention programs, and maintaining an academic environment supportive of early literacy. (Chapter 7)

Senate Joint Resolution 31 from the 2010 General Assembly directs the Joint Legislative Audit and Review Commission (JLARC) to study ways to promote and ensure early reading proficiency and comprehension among third grade students in public schools. The mandate requires JLARC to assess the extent to which third grade students in Virginia public schools are successful readers, and to recommend strategies or practices to "improve and sustain the early reading proficiency of third grade students." Research methods used during this review include an analysis of student-level SOL test data; a survey of Virginia school divisions; site visits to school

divisions, including classroom observations; interviews with early literacy experts; and an extensive review of the early reading literature. The SOL test data analyzed and cited in the report are from the spring of 2010. This was the most recent data available for analysis when the research was conducted (from fall 2010 to early summer 2011). Consequently, the 2010 data are cited in the report as the most recently available data.

BACKGROUND FOR EXAMINING DEVELOPMENT OF READING SKILLS IN VIRGINIA

The importance of reading success in school and its impact on a student's later academic and social outcomes is widely acknowledged. Several longitudinal studies have found that strong readers in the early elementary grades have an academic advantage, while students who struggle early have difficulty succeeding in school. The research also indicates reading deficits should be addressed as soon as they are identified.

Virginia recognized and took action on the importance of developing early reading skills with the 1997 Early Intervention Reading Initiative (EIRI). EIRI was established to identify children with reading difficulties in kindergarten through third grade and provide them with additional instruction. The Phonological Awareness Literacy Screening (PALS) or a Virginia Department of Education (DOE)-approved alternative assessment is used to screen children for reading difficulties, and for those students identified as having early reading problems, EIRI provides funds to deliver additional instruction. What makes EIRI somewhat unique is its provision of a statewide, universal instrument (PALS) for assessing early reading and an at or near 100 percent participation rate by Virginia school divisions. For the 2010-2012 biennium, the General Assembly appropriated $13.4 million annually for this initiative.

Recent data shows that Virginia's efforts appear to have paid off, as Virginia students perform relatively well compared to most other states. On the 2009 National Assessment of Student Performance (NAEP) for fourth grade reading, only one state, Massachusetts, had an average score that was higher than Virginia by a statistically significant amount.

PASS RATES ON THE THIRD GRADE READING SOL TEST HAVE INCREASED, BUT FEASIBILITY OF ACHIEVING A 95 PERCENT PASS RATE STATEWIDE IS QUESTIONABLE

Student performance on the third grade reading Standards of Learning (SOL) test has increased substantially over the past decade. Statewide pass rates have increased from 55 percent in 1998 (the first year the test was administered) to between 80 and 86

percent in recent years, with the 2010 pass rate at 83 percent. The pass rate statewide is still substantially below a goal established by the Virginia Board of Education of a 95 percent pass rate.

The feasibility of reaching a 95 percent pass rate on a statewide basis is questionable, however. A number of study findings point to this conclusion, including that (1) the upward trend in the statewide pass rate has stalled in recent years, (2) only one school division had a pass rate greater than 95 percent in 2010, (3) most large school divisions responding to a JLARC staff survey indicate that they do not think that a 95 percent pass rate is feasible, (4) the Board of Education has adopted revisions to the reading SOL that will increase the challenge presented by the curriculum and testing, and (5) national and international reading proficiency results shown in Chapter 1 of the report indicate that Virginia is not unique in finding it a challenge to bring about one-sixth of students to desired levels of baseline reading proficiency. While a 95 percent pass rate may not be feasible, study findings also indicate there are opportunities to increase the extent to which high-quality reading instruction is provided, which could lead to the pass rate increasing from current levels.

SOL PASSING AND ADVANCED LEVELS APPEAR TO REASONABLY REFLECT GRADE-LEVEL PERFORMANCE

The mandate for this study requests information on the number of Virginia third graders reading at grade level. The study found that the passing and advanced levels for the SOL test appear to be reasonable approximations of the extent to which students are at or above grade-level proficiency. Based on this application of the SOL data, among the 87,360 third grade students taking the test in 2010, 72,131 students were reading at or above grade level, including 37,832 students reading at grade level.

THIRD GRADE SOL TESTING COULD FOCUS ON READING AND MATH ONLY, AND TEST SCORING METHODS COULD BE MORE FULLY EXPLAINED

Two concerns related to SOL test administration were raised during the study. The first concern relates to the number of SOL tests administered to third grade students. Third grade is the first year in which students take any SOL test, and third graders are required to take an SOL test in four subject areas: reading, math, science, and history. The extent of testing in fourth grade is less than in third grade, as science is not tested and the testing of history depends on whether the division chooses to have Virginia Studies taught in fourth or fifth grade. A review of practices in other states found that most states administer statewide examinations only in reading and math to third grade students. To enable third grade teachers to focus more heavily on reading skills, which

are necessary for learning in all other content areas, the State may want to consider limiting the third grade SOL tests to reading and math. Reducing the number of third grade SOL tests has been considered previously by the Board of Education, and is recommended by this study.

Another potential issue raised by school divisions relates to adjustments made to the number of correct responses needed to pass the test each year. The Board of Education determines the number of correct responses required for the achievement of passing and advanced levels on the third grade reading SOL. Over the years, there have been adjustments to the number of correct responses needed on the grounds that the test was slightly harder or easier than in previous years. These adjustments have affected the percentage of students passing the test.

DOE has not communicated well with school divisions about the basis for these adjustments, and some school divisions are skeptical of the process. Given the importance of SOL tests results for all concerned, DOE needs to provide a more explicit, non-technical explanation of how adjustments are made to the number of required correct responses. This could help increase school division confidence that the adjustments are well justified.

RANKING OF DIVISIONS BASED ON 2010 PASS RATES DIFFERS FROM RANKING BASED ON EXCEEDING EXPECTATIONS

As required in the study mandate, Virginia school divisions were ranked based on the extent to which their students passed the most recent third grade reading SOL test. In addition, divisions were ranked based on the difference between their actual and predicted pass rates. (JLARC staff determined the predicted pass rate based on a statistical analysis of the socioeconomic characteristics of students within the division.) This second ranking provides an indication of the extent to which the school divisions may be responsible for raising (or lowering) the expected performance of their students (relative to what would be expected given their socioeconomic characteristics).

The following table shows the top five school divisions based on the 2010 SOL reading pass rate and the top five divisions with pass rates most exceeding their predicted pass rate. Only one division, Patrick County, exceeded the Board of Education's goal of a 95 percent pass rate. A number of the top divisions performing above their predicted pass rates have relatively high populations of students with socioeconomic challenges compared to other divisions. These divisions were successful in 2010 in raising student performance above expectations in spite of these challenging factors.

This is likely due in part to their effective use during that year of some best practices and strategies for early reading programs.

Top Five School Divisions Based on Pass Rates for 2010 Third Grade Reading SOL Test Compared to Top Five School Divisions Exceeding Expectations

Rank Based on Pass Rate	Top 5 School Divisions Based on Pass Rate	Pass Rate	Rank Based on Exceeding Expectations	Top 5 School Divisions Exceeding Expectations	Pass Rate	Percent Above Expectations
1	Patrick County	95.4%	1	Martinsville City	89.9%	17.3%
2	Scott County	92.9	2	Patrick County	95.4	13.5
3	Highland County	92.9	3	Buckingham County	90.7	11.2
4	Falls Church City	91.6	4	Danville City	82.8	10.0
5	Hanover County	91.4	5	Charlotte County	89.3	9.0
	Statewide Pass Rate	***82.6%***				
	Statewide Goal	***95.0%***				

Note: Pass rates were calculated based on students who took the 2010 third grade reading SOL test. Third grade students who took an alternate test or who were not tested at all were not included in the pass rates presented in this table.

Source: JLARC staff analysis of 2010 third grade reading SOL test data provided by the Department of Education.

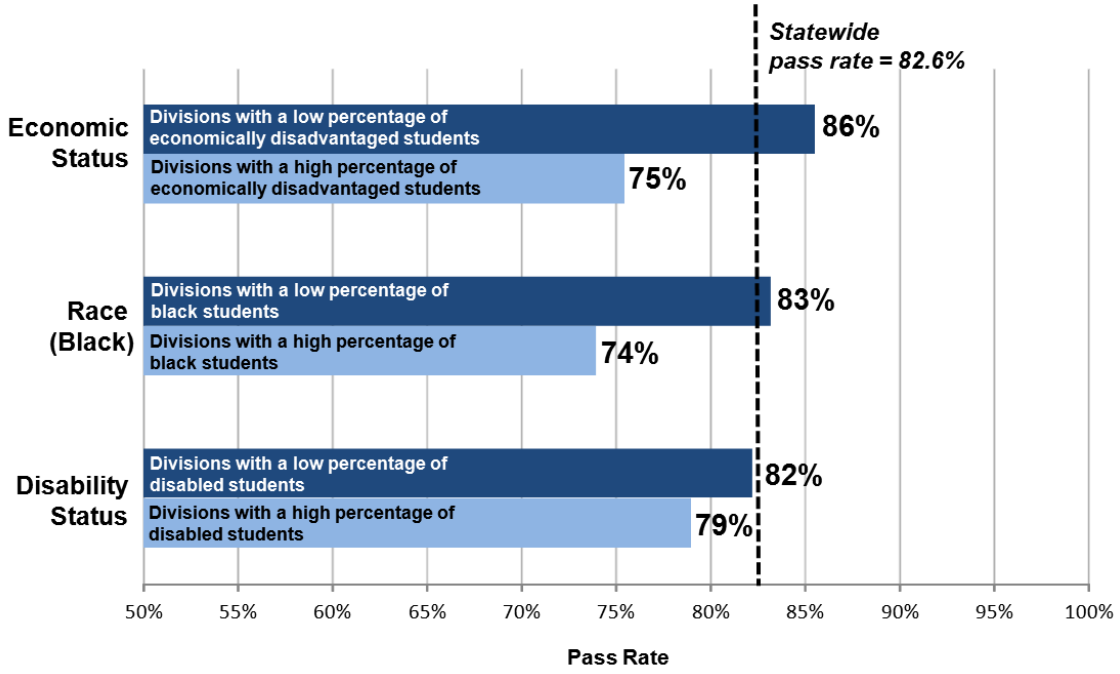
FACTORS ASSOCIATED WITH THE READING PERFORMANCE OF THIRD GRADE STUDENTS

Three factors most strongly associated with the variation in third grade reading performance in Virginia are (1) a student's economic status, (2) a student's disability status, and (3) a student's race. The top figure on the next page highlights that Virginia school divisions with a higher percentage of economically disadvantaged students, a larger population of disabled students, or a larger proportion of black students tended to have, on average, lower third grade reading SOL pass rates in 2010 compared to other divisions.

SOL pass rates at the student level illustrate the compounding effects that economic status, race, and disability can have on student performance. The bottom figure on the next page shows how average student pass rates varied based on these factors. The highest average pass rate was achieved by Asian students who were not economically disadvantaged and did not have a disability. These students had an average pass rate of 94 percent on the 2010 reading SOL test. The lowest average pass rate shown in the figure, 42 percent, was for economically disadvantaged black third grade students identified as having a disability.

Certain underlying factors that coincide with a student's economic status and race appear to have an impact on reading performance. With regard to race, research suggests that race may be serving as a proxy for the presence (or absence) of family structures which provide parental support at home for reading. U.S. Census data from 2005-2009 indicate that black and Hispanic families are two

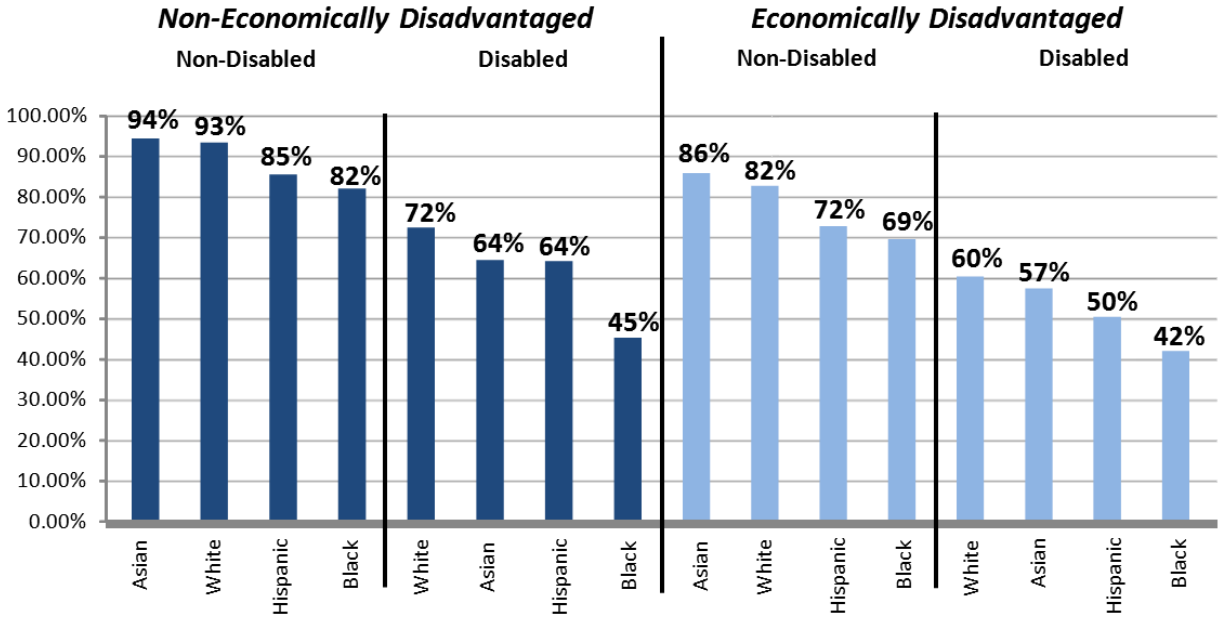
Divisions With a Higher Percentage of Economically Disadvantaged, Black, or Disabled Students Tend to Have Lower Pass Rates on Third Grade Reading SOL Test



Note: This graphic illustrates pass rates for the highest and lowest fourth of school divisions, which is based on the corresponding percentage of economically disadvantaged, disabled, or black students.

Source: JLARC staff analysis of 2010 third grade reading SOL test data provided by the Department of Education.

Pass Rates Among Virginia's Third Grade Students Varied Considerably Relative to Their Economic Status, Disability Status, and Race



Source: JLARC staff analysis of 2010 third grade reading SOL test data provided by the Department of Education.

to three times more likely to have single-parent households compared to other ethnic groups. This is significant because numerous studies have shown that children from single-parent families tend to do less well in school compared to children from two-parent families.

A key point that stems from the overall finding that socioeconomic factors affect student reading performance is that SOL test results alone do not directly indicate the quality or the "value added" by divisions or schools. To consider the difference made by a division or school, the profile of the students in the division or school needs to be taken into account.

KEY STRATEGIES AND PRACTICES FOR THE CLASSROOM READING PROGRAM

All early elementary classroom reading programs should cover six key components—phonemic awareness, phonics, fluency, vocabulary, text comprehension, and writing. However, research shows that certain practices and strategies for designing a classroom reading program can lead to greater success in teaching students these components. Key characteristics of an effective classroom reading block (which is the portion of time during the school day devoted to literacy activities) include

- a reading block lasting at least 90 to 120 minutes daily that includes writing;
- strong whole-group instruction supplemented with small-group differentiated instruction that meets students' needs and reading abilities at their varying levels;
- use of data to inform instruction with continuous progress monitoring, particularly for small-group differentiated instruction; and
- high-quality, engaging reading material available at different levels.

Most Virginia school divisions report already incorporating these practices into their classroom reading programs. These practices should be seen as helping to set minimum conditions for effective instruction, but they do not guarantee that effective instruction will take place. Two areas in which lower-performing divisions on the 2010 SOLs appear to lag behind their higher-performing peers are including writing in the reading block and use of technology (which is related to having engaging and varied materials available).

Two other practices that can improve the success of an elementary reading program are access to preschool and guidance provided by

the school division. Access to preschool, particularly for at-risk children, can help ensure that students have the pre-literacy knowledge necessary for learning early reading skills when they enter kindergarten. In addition, some school divisions, particularly those with large portions of students coming from more challenging socioeconomic backgrounds, have found that guidance and direction from the school division on how to structure a reading program can help improve reading success. This is in contrast to leaving decisions about the reading program largely to school-level administrators and teachers, which can lead to significant variability in the reading program across the division.

WELL-TRAINED TEACHERS ARE CRITICAL FOR AN EFFECTIVE READING PROGRAM

The vast majority of Virginia school divisions report implementing recommended best practices which provide the foundation for a good classroom reading program. Consequently, the presence of these foundational practices does not appear to go far in explaining the variation in student outcomes between divisions which is not explained by socioeconomic factors. Research literature suggests that an important portion of the unexplained variation is likely attributable to the quality of teaching and the support received by teachers, two factors which are difficult to quantify. In classrooms with highly effective teachers, students are more engaged, the learning environment is richer, and students learn more.

Well-trained, effective teachers were observed in Virginia school divisions which had performed both above and below expectations in 2010. In general though, effective, well-trained teachers were observed more frequently and seemed to be part of the teaching culture in divisions which had achieved above expectations. In contrast, teachers in divisions performing below expectations in 2010 tended to receive less training on how to teach reading, and a smaller proportion of these divisions reported frequent use of best practices for reading instruction. These divisions seemed better characterized as having "pockets of expertise," with expert teaching not as widespread throughout the division.

Research shows that providing high-quality, ongoing professional development is key to helping teachers develop their instructional skills related to teaching reading. Professional development for early elementary school teachers should include the foundations of teaching reading and comprehension, differentiated instruction, and classroom management. In addition to ongoing professional development, adequate preparation of new teachers in how to teach reading has been a concern.

SUPPORT FOR EARLY ELEMENTARY CLASSROOM TEACHERS IS CRITICAL

Early elementary teachers must also be well supported to maximize the effectiveness of the classroom reading program. Literacy coaches can be a valuable support by providing on-site professional development and in-class coaching for teachers on how to improve reading instruction. This is in contrast to one-shot, workshop-oriented professional development for teachers, which research shows is often not effective. However, research also shows that the effectiveness of literacy coaches can vary, and that literacy coaches who are well trained and spend more time with teachers (as opposed to other administrative activities) have a greater impact on literacy achievement. Thus, Virginia may want to consider establishing a definition for literacy coaches, including guidelines for time allocation, and strengthening credentialing requirements for this position.

While literacy coaches work with teachers, reading specialists provide assistance to students who need additional support beyond the classroom reading program. Reading specialists are widely used by Virginia's school divisions (92 percent of divisions report having them) and the *Code of Virginia* specifies that one full-time reading specialist should be employed in each elementary school at the discretion of the local school board. In practice, divisions report that the majority of schools (84 percent), in fact, do have at least one reading specialist dedicated to a specific school.

Another means of supporting classroom teachers and bolstering the effectiveness of a classroom reading program is having additional adults to assist during the reading block and maintaining small class sizes. Additional staff and small class sizes help keep students on task and allow multiple teacher-led small groups to be held simultaneously during small-group time.

RESPONSE TO INTERVENTION IS AN OVERALL STRATEGY TO ADDRESS READING DIFFICULTIES

There is widespread agreement that the best strategy for struggling readers is early identification and supplemental instruction for the students' specific difficulties. A recommended method for implementing this strategy is Response to Intervention (RtI). RtI identifies struggling readers through universal screening and attempts to assist struggling readers with interventions before they fall further behind. Student responses to interventions are then measured to determine whether students (1) no longer need the intervention, (2) continue to need some intervention, or (3) need even more intensive intervention.

RtI is becoming increasingly common in elementary schools across Virginia. However, a frequent concern expressed among school divisions to JLARC staff with RtI is the level of resources it requires. With the RtI approach, intervention is delivered in tiers of intensity depending on student need. Top tiers require small-group or one-on-one interventions which are expensive and require significant staff time. According to a JLARC staff survey, about 90 percent of divisions indicate that they are not able to provide one-on-one intervention to all third grade students who need it (though not all of these divisions may be using RtI). However, some divisions have found that the RtI approach can achieve savings, for example, by decreasing the need for more intensive interventions later.

KEY STRATEGIES AND PRACTICES FOR DIFFERENT CATEGORIES OF STRUGGLING READERS

Categories of students who are more likely to be struggling readers (related to the socioeconomic factors discussed above) are students with a disability, economically disadvantaged students, and students from single-parent households (for which race appears to serve as a proxy). Also, students with a limited English proficient status are more likely to struggle with learning to read.

RtI is a general strategy that can be used across all categories of struggling readers, but some specific strategies can also be used with each category. For students with disabilities who often receive special education services, collaboration between special education personnel and regular classroom education personnel is a key condition, and interventions must be flexible. Specific intervention programs have been identified as being particularly effective for students with disabilities.

For English language learners, oral proficiency in English and oral proficiency and literacy in the student's first language are important factors. Also, English language learners may need more help in developing their English vocabulary. Specific intervention programs have also been identified as being particularly effective for these students.

For economically disadvantaged students and students from single-parent households, ensuring adequate resources are available for a well-run RtI program is probably the most effective strategy, recognizing that school divisions with greater proportions of these students will need to provide more interventions. Also, some school divisions have found effective strategies for reaching out to parents to increase their involvement in their child's reading development.

OPTIONS TO IMPROVE THIRD GRADE READING PERFORMANCE

Based on the research and findings of this study, there are a variety of options that could be implemented at both the State and local level to help improve reading performance in third grade, as well as in prior grades (see table below). The first two sets of options focus on providing adequate training and support related to reading instruction for classroom teachers. Other options are to support effective reading intervention programs and ensure that the overall academic environment is conducive of early literacy.

If the State were to provide additional support to improve early reading programs, additional resources should be focused on providing adequate training and support for classroom teachers. Providing more support and guidance on best practices for teaching reading through the PALS office at the University of Virginia appears to be the option with lowest additional State cost that could also have a high impact on improving reading instruction throughout the State.

Options to Improve Reading Performance in Kindergarten Through Third Grade in Virginia

	Priority	Suggested Responsibility	Estimated Additional Annual Cost (State)[a]
Maintain Early Elementary Teachers Well Trained in Reading Instruction			
Maintain or expand training opportunities in early reading for teachers	High	Local	$0
Provide more support and guidance on best practices for teaching reading through the PALS office	High	State	$380,000-$600,000
Provide Support for Early Elementary Classroom Teachers			
Fund literacy coaches	High	State/Local	$5.0 million–$34.5 million
Fund reading specialists	Medium	State/Local	$36.3 million
Maintain/increase funding for paraprofessionals and aides to support the classroom reading program	Medium	Local	$0
Maintain or reduce class sizes in the early elementary grades	Medium	State/Local	$0
Support Well-run, Effective Intervention Programs			
Support quality Response to Intervention programs, particularly in poor divisions	High	State/Local	$0
Fully fund the State's Early Intervention Reading Initiative through third grade	Low	State/Local	$3.1 million
Maintain an Academic Environment Supportive of Early Literacy			
Maintain and/or expand preschool opportunities	High	State/Local	$0[b]
Explore and implement best practices in this report	High	Local	$0

[a] Cost to local school divisions not determined as part of this study.

[b] Maintaining current service levels for the Virginia Preschool Initiative would not increase State costs over current funding levels. However, expanding eligibility for the program or increasing per pupil amounts would increase both State and local costs.

Source: JLARC staff analysis and data from the Virginia Department of Education and PALS office at the University of Virginia.

Chapter 1

Introduction

In Summary

The importance of reading for success in school, and its usefulness in daily living, is widely acknowledged. Several studies have found that strong readers early in the elementary grades have an academic advantage, while students who struggle with reading early have had continued difficulty succeeding in school. The research indicates that it is important to address reading deficits as they are identified rather than expect that deficits will be resolved as the student matures. Virginia has made an investment in improving student reading skills through actions such as establishing an early intervention initiative in 1997. Recent (2009) data are available on the reading performance of Virginia fourth and eighth grade students on a national assessment and 15-year-old U.S. students on an international assessment. Relative to students in other states, Virginia students performed well in the national reading assessment. The average performance of U.S. students on the international assessment—toward the middle among the countries compared—masks the fact that some demographic categories of U.S. students performed well above and some well below the overall average. This is one indication of the extent to which socioeconomic factors currently impact reading performance in the United States.

Research Methods

Major methods for this study included a statistical analysis based on all 2010 third grade reading SOL results (over 87,000 students); a survey of the 132 school divisions, with an 88 percent response rate; on-site interviews with division reading coordinators, principals, and teachers; structured observations of 44 reading block classes at 22 schools; and a review of some of the prominent works in the research literature addressing reading issues. Appendices B and D provide more details on these methods.

Senate Joint Resolution 31 from the 2010 General Assembly (Appendix A) directs the Joint Legislative Audit and Review Commission (JLARC) to study ways to promote and ensure early reading proficiency and comprehension among third grade students in public schools. The resolution cites the importance of achieving reading success for students, particularly by third grade. The mandate requires JLARC to assess the extent to which third grade students in Virginia public schools are successful readers, and to recommend strategies or practices to "improve and sustain the early reading proficiency of third grade students."

Virginia's interest in improving the reading instruction and skills of children should be seen within a broader context of attention given to the issue nationally. Concern that children are not being equipped with adequate reading skills has been longstanding in the United States. As illustration, 55 years have passed since *Why Johnny Can't Read* by Rudolf Flesch was published. This book provoked substantial concern at that time about the reading capabilities of children. It also provoked controversy across the nation on how to teach reading.

Following decades of research in reading, today there is more of a consensus among reading experts about what quality reading instruction entails. Nonetheless, there are still areas not fully ad-

dressed by research. In addition, practical implementation of desirable reading instruction practices continues to present a challenge, particularly for teachers not experienced with these modes of instruction. According to the literature, for example, mastering the teaching of explicit reading comprehension strategies to a level which enables significant growth in less skilled readers may take months of professional development work. Another challenge in the teaching of reading is that the same methods do not work in all situations with all students, requiring school systems and classroom teachers to be flexible.

Underscoring the importance of facing these challenges is the concern that students who do not leave the third grade with good reading comprehension skills may have escalating difficulty in succeeding in school. There has been interest nationally and in Virginia in finding ways to successfully boost the reading skills of students at an early age with the desired outcome of increasing their prospects for longer-term success in academics and life.

EARLY READING ACHIEVEMENT IS IMPORTANT TO ENSURE LATER ACADEMIC SUCCESS

Reading research literature indicates that children who experience difficulties early in reading and literacy instruction are likely to have problems catching up with their peers and achieving reading proficiency for their grade level. Learning to read has a "build-upon" nature. The early development of reading skill enables children to gain more enjoyment from reading, so they read more, and further develop their skills. Struggling readers are more inclined to read less, hindering their development. Thus, as one reading expert put it, "Early achievement spawns faster rates of subsequent achievement."

Reading Becomes an Increasingly Important Tool After Third Grade

As student's progress beyond the third grade, the ability to read and comprehend material becomes increasingly important to student success in all subject areas. A frequently heard statement to capture this trend, credited in origin to reading researcher and educator Jeanne Chall, is that for the first few years of school, students are "learning to read" but soon they need to be "reading to learn." The statement conveys an important point, but reading experts indicate that it should not be taken too literally. For example, Michael Pressley, another expert in reading instruction, once noted that "even during the height of learning to read – in grades 1 to 3 – children are learning while they read if they are reading worthwhile texts." In addition, as noted by researchers for the Florida Center for Reading Research:

> While reading does become an increasingly important tool for helping students expand their knowledge after grade three, learning to read hardly comes to an abrupt halt at the end of the second or third grade.... Students must continue to learn many new things, and acquire many additional skills, in order to maintain reading proficiency as they progress from early to late elementary school.

Achieving Early Reading Proficiency Is Linked to Future Academic Success and Other Desirable Outcomes

Studies that track students over the long term are challenging to complete. Still, a few such studies tracking students with varying degrees of success in early reading performance have been conducted. These studies have shown that differences in student success in early reading are associated with different academic and non-academic outcomes which can persist during the elementary and secondary school years and beyond.

For example, in 2010, policy researchers from Chapin Hall at the University of Chicago released *A Longitudinal Analysis of Third Grade Students in Chicago in 1996-97 and their Educational Outcomes*. The study tracked a cohort of 26,000 Chicago public school students. In third grade, these students took the Iowa Tests of Basic Skills (ITBS) for reading. For study purposes, the students were grouped into three categories: those scoring below the 25th national percentile on the test, those scoring from the 25th percentile to under the 75th percentile, and those scoring at or above the 75th national percentile. The low scoring group was considered below grade level, the middle group at grade level, and the upper group above grade level.

The study examined the association of the third grade results with eighth grade outcomes for the students. The study focused substantial attention upon eighth grade because that was an important milestone for Chicago students, playing a large role in determining the high school the students would attend. As explained by study authors,

> Students who meet certain academic and attendance requirements are eligible to attend schools across the city, regardless of where they live. As a result, high-performing students tend to attend high-performing high schools. Similarly, low-performing students tend to enroll in lower-performing high schools. As a result of this high school sorting process, eighth-grade performance is extremely important.

The study found that the third grade reading level had a strong association with ITBS reading scores in eighth grade. The study also found some impacts beyond the eighth grade. For example, college attendance rates among the students were less than 20 percent for students who had been reading below grade level in third grade, compared to about one-third for those at grade level, and almost 60 percent for those reading above grade level.

Some earlier studies also found that the development of early reading skills has a relationship to later outcomes. For example, a 2006 study by Miles and Stipek found that poor literacy achievement in the first grade and third grade predicted high levels of aggressive behavior in the third grade and fifth grade, respectively. This same study also found associations between social skills and literacy achievement in the first, third, and fifth grades. The authors saw study results as supporting the theory that as children experience reading difficulties, they may begin demonstrating more aggressive and disruptive behaviors.

A 1997 study by Cunningham and Stanovich found that reading ability in first grade is a strong predictor of educational outcomes in eleventh grade. The researchers for this study found that first grade reading comprehension scores were significantly correlated with verbal ability and general knowledge ten years later in the eleventh grade.

Also, a cohort of 403 Connecticut children, first identified in kindergarten in 1983, were tracked for their performance in a variety of skill areas from first to ninth grade. Various analyses of the data were conducted. Study researchers (Francis, Shaywitz, and others) looked at reading performance relative to student IQ scores using the Woodcock-Johnson Psycho-educational Test Battery. The initial reading ability of the students was determined based on third grade information. The study used statistical analysis to identify students as (1) "deficient in reading achievement relative to IQ expectations" (eight percent of students), (2) deficient in reading achievement consistent with IQ expectations" (nine percent), and (3) have no reading deficiency. The group of students with no reading deficiency accounted for about 83 percent of the students. The first two groups of students with reading deficiencies accounted for 17 percent of the students tracked.

The study found that students with reading deficiencies, whether seemingly IQ related or not, continued to have substantially lower reading skills throughout the years. According to study researchers in a 1996 journal article, the results showed that "disabled readers fail to develop adequate reading skills, implying a problem that persists into adolescence and, in other studies, adulthood." The study has been seen as providing strong support for the "defi-

cit model" of reading disability, holding that children fail to read proficiently because of the absence of cognitive skills which will not just naturally develop given time. (The alternative model is a "developmental lag" model, holding that children who differ in reading ability vary only in the rate at which their cognitive skills develop, so that reading skill will naturally emerge given time.)

STATE SUPPORT IS PROVIDED FOR EARLY LITERACY IN VIRGINIA

EIRI is one of the most comprehensive literacy screening and intervention programs in the country.

Virginia's primary support for early reading in public education is the Early Intervention Reading Initiative (EIRI), which is one of the most comprehensive early literacy screening and intervention programs in the country. Additional resources for teaching young students to read (in some cases related to EIRI), are provided through the University of Virginia (UVA) and Department of Education (DOE).

Early Intervention Reading Initiative (EIRI) Using the Phonological Awareness Literacy Screening (PALS)

EIRI was established by the General Assembly in 1997 and expanded in 2000. Its purpose is to identify children with reading difficulties in kindergarten through third grade and provide them with additional instruction. Through early identification and the provision of intervention services, EIRI seeks to improve the essential reading skills of identified students by the end of each grade level in kindergarten through third grade.

EIRI seeks to accomplish its goal of reducing the number of children with reading problems via (1) early and continual literacy screening to identify children with potential reading difficulties, and (2) additional reading instruction for students identified as having difficulty. What makes EIRI somewhat unique among other states is its provision of a statewide, universal instrument for assessing early reading and the at or near 100 percent participation rate by Virginia school divisions. DOE indicates that approximately a quarter of a million children have been screened each year in Virginia to identify early reading problems since 2001, and that on average, more than 42,000 children have received reading intervention services under EIRI annually. All school divisions have certified that they will be participating in EIRI for the 2011-2012 school year.

PALS Is Used to Screen Children for Reading Difficulties. A requirement for participation in EIRI is that school divisions must screen kindergarten through third grade students on their literacy skills at specified intervals. EIRI provides a free statewide screening instrument to divisions for this purpose—the Phonological Awareness and Literacy Screening (PALS). PALS was developed

by experts in reading instruction research at the Curry School of Education at UVA and is funded through an annual State grant of $950,000 awarded to the Curry School. (The grant covers items such as personnel and information technology costs, and costs related to the printing, collating, and shipping of PALS materials to school divisions.) School divisions have the option to select an alternate DOE-approved diagnostic screening instrument to meet the EIRI screening requirement. However, Fairfax County is the only division to exercise this option. Therefore, because virtually all divisions use PALS, it provides a near universal literacy skills screening for Virginia public school students.

PALS offers two reading assessments corresponding to the grade levels in which they are used: PALS-K and PALS 1-3. The major purpose of the assessments is to identify students who are performing below grade-level expectations in specified areas and may need additional instruction beyond what is typical for developing readers. PALS also has the capability to diagnose specific literacy skill deficits in students. The assessments measure students' skills and knowledge along multiple dimensions such as knowledge of letter sounds, spelling, word recognition, and comprehension.

Table 1 shows the PALS assessment schedule for Virginia schools. According to the EIRI guidelines, all students in kindergarten and first grade must be screened annually each spring. Students attaining a high benchmark indicating that they are performing clearly above grade-level expectations in the spring of first grade or fall of second grade no longer need to be screened for EIRI. PALS screening in the spring of third grade is optional due to the fact that all students take the State's third grade reading assessment—the Standards of Learning (SOL) assessment. The PALS office at UVA maintains a website for teachers to enter their students' results from the spring and fall PALS screenings and

Table 1: PALS Assessment Schedule for Virginia Elementary Schools

Grade	Fall	Spring
K	All students	All students
1	Students new to Virginia schools; students who received intervention over the summer	All students
2	Students new to Virginia schools; students who received intervention over the summer	All students except those previously meeting the high benchmark in spring of first grade or fall of second grade
3	Students new to Virginia schools; students who received intervention over the summer	Optional (all students take the SOL reading test)

Source: PALS 1-3 Technical Reference.

receive immediate feedback. This tool also allows Virginia students' progress to be tracked over time, even if they move to another Virginia public school.

According to the research literature, all reading assessment tools have limitations. However, PALS has received favorable reviews for its accuracy, reliability, validity, and usability as an assessment instrument from multiple sources, including the National Center on Response to Intervention. Further, while acknowledging that PALS has some limitations, reading expert Natalie Rathvon indicated the following in her 2004 book, *Early Reading Assessment: A Practitioner's Handbook:*

> An outstanding example of the new generation of evidence-based reading screening instruments, the PALS also receives high usability ratings and yields a wealth of instructionally relevant information. For a large-scale, teacher-administered battery, its technical quality is unsurpassed, with regular reviews and modifications to ensure the most accurate and valid measurement.

EIRI Provides Funds to Deliver Additional Instruction to Students Identified With Early Reading Problems. The second component of EIRI is the provision of additional instruction to children identified as having early reading problems. For the 2010-2012 biennium, the General Assembly appropriated $13.4 million annually for the program. State payments to school divisions are calculated using a formula based on the State's share of providing an additional 2.5 hours of instruction each week for the estimated number of students qualifying for intervention in a division at a rate of five students to one teacher. The estimated number of students is determined by the percentage of students in a division identified as requiring intervention based on the previous spring's PALS. EIRI funding is provided to serve 100 percent of identified students in kindergarten through second grade. However, funding is provided to serve 25 percent of eligible students in grade three.

$13.4 million is appropriated annually for EIRI in the 2010-2012 biennium.

To participate in EIRI, divisions must also provide a local match to the State direct aid funds based on their composite index of local ability to pay. The required local match has been the reason typically given by the few divisions that have not participated in EIRI from time to time, including Appomattox County in FY 2011. (In FY 2012, Appomattox County began participating in EIRI again.)

Although funding for EIRI is predicated on a specified formula, the Appropriation Act gives divisions flexibility in how to provide intervention funded through the program. The act states that intervention programs may include, but are not limited to, the use of special reading teachers; trained aides; volunteer tutors under the

supervision of a certified teacher; computer-based reading tutorial programs; aides to instruct in-class groups while the teacher provides direct instruction to the students who need extra assistance; or extended instructional time in the school day or year for these students.

Additional Support and Services Are Provided by the PALS Office and DOE

In addition to those services that are directly related to the administration of EIRI, the PALS office and DOE provide additional support and services for Virginia school divisions in early literacy. The PALS office provides professional development opportunities to school divisions, and the PALS website includes tools for tracking students' literacy development and planning literacy instruction. Some of the additional supports, tools, and services available through the PALS office or website include

- telephone hotline and e-mail support system for teachers and administrators (the PALS office annually fields over 3,000 emails and over 6,000 phone calls on the PALS hotline);
- Annual Early Reading Intervention Symposium, provided for school division representatives, which includes EIRI news and updates on newly developed resources, as well as professional development;
- regional assessment training workshops;
- interpretive reports to help teachers plan literacy instruction, group students for instruction, and monitor students' progress over time;
- PALS Mid-Year (Form C), which is the full PALS assessment that can be administered mid-year to monitor student progress;
- PALS Quick Checks, which can be administered as frequently as every three weeks and can be isolated to specific literacy tasks to monitor student progress;
- instructional activities database linked to specific areas of need;
- Electronic Lesson Plans organized by stage of reading development and designed to guide teachers in planning instruction;
- PALS CAL, which is a monthly online calendar and newsletter for teachers that includes information about assessment windows, score entry deadlines, online resources, and professional development opportunities; and
- PALS parent activities.

While nearly all Virginia school divisions use PALS as an assessment instrument for early literacy screening, as required by EIRI, Table 2 shows that school divisions vary in their use of other PALS tools or functions. It should be noted that the extent to which the functions listed in the table are used within the divisions may vary, as many divisions give their schools and teachers a large degree of latitude in planning literacy instruction. Only one division, Fairfax, reported not using PALS to inform reading instruction. (Fairfax uses a DOE approved screening instrument in place of PALS).

Of particular note, 80 percent of divisions reported using the PALS Mid-Year (Form C) and 71 percent of divisions reported using PALS Quick Checks. During interviews with school division staff, a number of teachers indicated that they would like to have a tool to monitor student progress throughout the year, particularly for those students who make progress in their reading skills but are still unable to pass the third grade reading SOL. PALS Mid-Year (Form C) and PALS Quick Checks can be used for this purpose. It may be that these teachers are unaware that these PALS tools exist.

Table 2: School Divisions' Use of PALS Tools and Functions

Tool/Function	Percent of Divisions[a]
Help determine students' specific needs regarding reading instruction	94%
PALS results to inform reading instruction	88
Grouping students for differentiated instruction	86
PALS Mid-Year (Form C)	80
PALS Quick Checks	71
Planning literacy instruction	70
Professional development for teachers	57
PALS activities database	38
PALS Electronic Lesson Plans[b]	26
PALS parent activities	24
Do not use PALS to inform reading instruction	1

[a] Percent based on 115 divisions responding to the JLARC staff survey.
[b] This is a new function in PALS. Staff in the PALS office expect its utilization to increase.

Source: JLARC staff survey of school divisions about early reading programs, spring 2011.

DOE also provides support and guidance to school divisions on early literacy instruction. DOE states that it "does not mandate or prescribe a particular curriculum model or lesson plan" for elementary reading programs. However, one primary elementary English/reading specialist provides technical assistance to school divisions requesting information on best practices and professional development through presentations at conferences, electronic correspondence, and via telephone. In addition, some assistance can

be delivered by DOE to struggling schools identified as being in "school improvement." DOE also provides the following early reading resources on its website:

- Elementary reading comprehension and vocabulary strategies videos - demonstrations by Virginia teachers of vocabulary and comprehension strategies
- *Effective Elementary Reading Programs Assessment and Planning Instrument* – criteria to evaluate the implementation of school-wide reading programs
- *Elementary Reading Program Planning and Implementation Tool* – guidance in developing, implementing, sustaining and refining a comprehensive and effective school-wide reading program and a self-assessment tool to evaluate the overall reading program
- *Assessment Instrument for Planning Effective Professional Development in Reading* – overview of components of reading instruction supported by scientific research and a guide to content that should be emphasized in a professional development program
- Elementary Reading Early Literacy Instructional Videos – demonstrations by Virginia teachers of instructional strategies and activities for teaching early literacy skills (new as of August 2011)

In general, the DOE resources appear to be less utilized than those provided by the PALS office. While 42 percent of divisions reported on the JLARC staff survey that they utilized the comprehension and vocabulary videos, utilization of the next three documents range from 25 percent or less of divisions. (The elementary reading early literacy instructional videos were not available at the time the survey was administered.) A third of divisions reported that they do not use any of the guidance documents provided by DOE. This may be, in part, due to lack of awareness, as a number of school divisions indicated that they were unfamiliar with the DOE documents until seeing them listed on the JLARC staff survey.

RECENT PERFORMANCE BY VIRGINIA AND U.S. ELEMENTARY AND SECONDARY SCHOOL STUDENTS IN READING

National and international tests for reading skills are not administered at the third grade level. However, national and state-level data are available for student performance at the fourth and the eighth grades on the 2009 National Assessment of Education Progress (NAEP) test. Also, recent (2009) results from an international test, the Programme for International Student Assessment (PISA) are available for 15-year-olds (over two-thirds of whom are

in tenth grade). The PISA data are of interest because the reading skill levels of these older students are in part a reflection of the adequacy or inadequacy of reading skill development in the earlier grades. Also, the international scope of the PISA test provides a broader context for viewing U.S. and Virginia student reading skills.

NAEP Reading Tests in 2009 of Fourth and Eighth Grade Students

NAEP, also known as the "Nation's Report Card," is an academic achievement test administered to a sample of students in each state, including Virginia. Fourth grade is the initial grade at which NAEP assesses reading skills. Only a sample of a state's fourth grade students take the NAEP reading test, but the sample is selected to be proportionally representative of the state's demographics.

Interpreting NAEP Scores and Performance Benchmarks. The scale of scores on NAEP ranges from zero to 500. Average scale scores on NAEP are reported for the nation and by state. In addition, NAEP has set three performance benchmarks: basic, proficient, and advanced.

The NAEP performance benchmarks are susceptible to misinterpretation. One such misinterpretation is that students scoring below the NAEP proficient level are poor readers. According to McKenna and Stahl in *Assessment for Reading Instruction*:

> Although these [NAEP performance levels] are listed as 'benchmarks,' they were designed as high standards for children to reach. The point of setting standards so high was that teachers would push their students toward these standards, rather than toward a more modest level of attainment. But children can fail to reach the 'basic' level for fourth grade, for example, and still demonstrate a literal understanding of what they read..."

Students scoring below a 208 did not meet "basic" performance on the 2009 NAEP test. However, students scoring below the basic level may still demonstrate reading competencies. For example, students may still be able to recognize details about characters in a story, make inferences about how characters in a story feel, retrieve relevant details, compare two characters, or recognize the meaning of words used by characters in a story.

At the basic, proficient, and advanced levels, fourth grade students demonstrate increasing skill in applying or drawing inferences from what they have read. For example,

- Within the basic level from 208 to 237, students may be demonstrating abilities such as recognizing main ideas that are not explicitly stated in the text, using information across the text to infer and recognize character traits, and using examples to support their opinion about a poem.
- Within the proficient level from 238 to 267, students may be demonstrating abilities such as providing text-based comparisons of changes in the feelings of main characters, using information from the text to support their own opinion, inferring the relationship between a main subject and a historical movement, and recognizing the technique the author has used in developing a character.
- Within the advanced level from 268 and above, students may be demonstrating abilities such as using information across paragraphs to draw complex inferences, using information to describe and explain a process or causal relationships, or making and supporting judgments about the "author's craft" supported with information from the text.

The U.S. Department of Education's National Center for Education Statistics (NCES) has stated its view that "the achievement levels are useful for reporting trends in the educational achievement of students in the United States." However, NCES also states that the achievement levels are still in place on a trial basis and "should continue to be interpreted and used with caution."

Virginia and U.S. Student Performance on the 2009 NAEP Fourth Grade Reading Test. With those caveats in mind, Virginia's average fourth grade NAEP reading score in 2009 was a 227—or between the basic (208) and proficient (238) thresholds, but closer to proficient. The national average score was 220.

Students in five states had higher average scores than Virginia (Massachusetts, Connecticut, New Hampshire, New Jersey, and Vermont). Of these, only Massachusetts students had an average score (234) that was higher by an amount achieving statistical significance. (The average score in the other four states was 229.) Besides these five states, the students in 14 states had average scores below Virginia's but not to a statistically significant extent. There is a striking geographic pattern in the results. Except for Florida, students in all states south of Virginia had average scores below Virginia's to a statistically significant extent.

Table 3 shows the distribution of students nationwide and in Virginia across the NAEP performance benchmarks. The table also shows Massachusetts data for reference purposes as the state with students achieving the highest average score.

Table 3: Fourth Grade Performance on NAEP Reading Benchmarks: National, Virginia, and Highest Scoring State Results

Students	Percent Below Basic Level	Percent at Basic Level	Percent at Proficient Level	Percent at Advanced Level
Nationwide	34%	34%	24%	7%
Massachusetts	20	33	34	13
Virginia	26	35	29	9

Source: National Center for Education Statistics, *Reading 2009*.

Virginia and U.S. Student Performance on the 2009 NAEP Eighth Grade Reading Test. For the eighth grade test, the threshold for basic performance is a score of 243, and for proficient performance it is a 281. The average score for Virginia students was a 266, again between the basic and proficient levels, but closer to proficient. Virginia students performed above the national average on the test. The average score for Virginia students was a 266, compared to a national average of 262.

Again there is a striking geographic pattern in the results. Nationwide, students in ten states had average student scores that were sufficiently above Virginia's to be statistically significant. Geographically, these ten states were all north of Virginia. Massachusetts had the highest average score, at 274. Students in all states south of Virginia except Florida had average scores below Virginia's to a statistically significant degree (Florida's score of 264 was within the range of no statistically significant difference). Table 4 shows the distribution across the NAEP performance benchmarks of students nationwide and in Virginia and Massachusetts.

Table 4: Eighth Grade Performance on NAEP Reading Benchmarks: National, Virginia, and Highest Scoring State Results

Students	Percent Below Basic Level	Percent at Basic Level	Percent at Proficient Level	Percent at Advanced Level
Nationwide	26%	43%	28%	2%
Massachusetts	17	40	37	5
Virginia	22	46	30	2

Source: National Center for Education Statistics, *Reading 2009*.

Nationwide, there were substantial differences in the scores achieved by eighth grade students relative to the education attainment of their parents. Students with parents graduating high school on average scored six points better than those whose parents did not finish high school. Students with parents having some education after high school on average scored 13 points better than those with parents only graduating high school. Also, students

with parents graduating college on average scored seven points better than those whose parents had education after high school but not a college degree.

Average student NAEP scores categorized by parent education attainment illustrate the extent to which the NAEP threshold for proficient performance is set at a demanding level.

Table 5 shows the average scores of students by the educational attainment of the parents, both nationally and in Massachusetts and Virginia. The data illustrate the extent to which the NAEP threshold for proficient performance is set at a demanding level. Across the nation, the average score of just those public school students whose parents graduated from college was still nine points short of the NAEP proficient level (272 versus 281). In only three states did these students have an average score at or above the proficient level, and these just barely exceeded or reached it – in Massachusetts at 283, Vermont at 282, and Connecticut at 281. The average score for the nation's private school students whose parents had a college degree was also not much over the proficient level, at 285. In Virginia, public school students with parents having a college degree scored an average of 274.

Table 5: Average Eighth Grade Scaled Scores on NAEP Reading Benchmarks Categorized by Parent Education Attainment (Proficient Threshold = 281)

Students	Parent Did Not Finish High School	Parent Graduated High School	Parent With Some Education After High School	Parent Graduated From College
National public	247	253	266	272
Massachusetts	252	260	270	283
Virginia	253	253	268	274

Source: National Center for Education Statistics, *Reading 2009*.

International Test in 2009 of Reading Skills Among Fifteen-Year-Olds in the United States and Other Countries

Examination of U.S. student results on international reading assessments, including results for older students, provides some additional context for understanding the reading development challenges for the nation, and by extension, the states. PISA measures the skills of 15-year-olds in reading, math, and science once every three years. An assessment was completed in 2009. The activity is coordinated by the Organization for Economic Cooperation and Development (OECD), an international organization with 34 member countries, including the United States and many of the world's most developed economies. However, nearly as many non-OECD countries as OECD countries participate in the assessment. OECD and non-OECD country results are generally shown separately, however. While there are a few very strong performers among the non-OECD countries, most of them have lower scores.

Of the U.S. students, about 82 percent were above and 18 percent below baseline proficiency.

The combined scaled score on the reading test ranges from zero to 1,000. Across the range in scores, PISA has set seven proficiency thresholds or levels (Levels 1a and 1b, and Levels 2 through 6). Table 6 provides a brief description of the proficiency levels and the percentages of U.S. students and students overall from OECD countries who scored within the different proficiency ranges. PISA sees Level 2 as the proficiency level at which students begin to demonstrate the reading skills that enable adults to participate effectively and productively in life. Of the U.S. students, about 82 percent were above and 18 percent below baseline proficiency. Percentage differences between U.S. students and OECD students were mostly small, with a slightly lower percentage of U.S. students scoring below baseline proficiency (Level 2), and a somewhat higher percentage of U.S. students scoring at the highest proficiency levels (Levels 5 and 6).

Table 6: Reading Proficiency of Students in U.S. and Organization for Economic Cooperation (OECD) Countries on Programme for International Student Assessment (PISA) Test

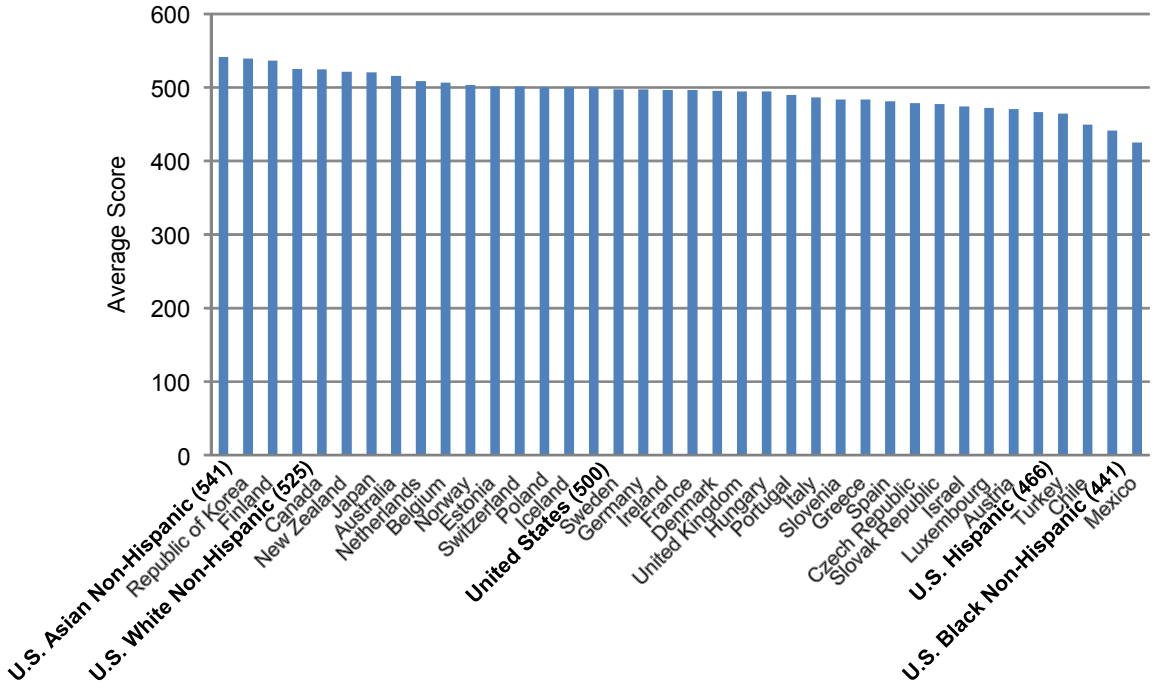
Proficiency Level / Minimum Score	Description	Percent of U.S. Students	Percent of OECD Students	Percent Difference
Below 1b	Students can perform few reading tasks.	0.6%	1.1%	Fewer U.S. students (17.7%) than OECD students (18.8%) were below Level 2.
1b / 262	Readers can locate pieces of explicitly stated information and make simple connections and lower-level inferences.	4.0	4.6	
1a / 335		13.1	13.1	
2 / 407	The baseline level of proficiency at which students begin to demonstrate the reading skills that will enable them to participate effectively and productively in life.	24.4	24.0	Slightly more OECD students (73.6%) than U.S. students (72.6%) were at Levels 2-4.
3 / 480	Students handle reading tasks of moderate complexity. Can account for many features in comparing or contrasting information. Often, information required for a correct answer is not prominent or there is much competing information.	27.6	28.9	
4 / 553	Students can handle difficult reading tasks.	20.6	20.7	
5 / 626	Students at this level are "world class knowledge workers of tomorrow." Students can handle texts that are unfamiliar in form and content, and can critically evaluate material and build hypotheses.	8.4	6.8	More U.S. students (9.9%) than OECD students (7.6%) were at Levels 5-6.
6 / 698	The most highly skilled readers, "capable of conducting fine-grained analysis of texts" and skillfully "reflecting upon and evaluating what they read."	1.5	0.8	

Source: JLARC staff compilation and analysis of information from the OECD's *PISA 2009 Results: What Students Know and Can Do,* and the NCES *Highlights from PISA 2009,* supplemental data, Table R7.

The average score of U.S. students on the PISA combined reading literacy scale was 500, and the OECD average score was 493. Students in six OECD countries had average scores higher by a statistically significant amount than the U.S. students (the Republic of Korea, Finland, Canada, New Zealand, Japan, and Australia). The average score of U.S. students was not measurably different than 14 countries, falling within a band ranging from Netherlands with a higher score to Hungary and the United Kingdom with lower scores. Students in 13 OECD countries had average scores measurably below the U.S. average.

Figure 1 shows the average scaled scores for students in the 34 OECD countries as well as for U.S. students by race/ethnicity. The PISA report indicates that the average scores of students in each of the four U.S. race/ethnicity categories shown differed by a statistically significant amount from the U.S. and OECD average scores. Among U.S. students, Asian and white students had average PISA scores that fell within the range of scores from the six countries with average student scores measurably above the U.S. student average. The data provide one indication of the extent to which socioeconomic factors currently impact student reading performance in the United States.

Figure 1: On 2009 PISA Reading Test, the Average U.S. Student Score Was Similar to Many Other OECD Countries but Masked Significant Race / Ethnicity Score Differences



Note: Of the 31 non-OECD participants, three had higher average scores than U.S. students: Shanghai (556), Hong Kong (533), and Singapore (526).
Source: Data from Tables 3 and 5 in *Highlights from PISA 2009*, U.S. DOE's National Center for Education Statistics.

Some of the concern about U.S. schools and the quality of instruction has stemmed from the fact that students in a number of other countries are, on average, exceeding or are close to average U.S. student performance. Also of note, however, is that published compendiums of statistics from OECD countries, largely drawn from data between 2000 and 2005, give the United States lower rankings among OECD countries in a number of indicators addressing the well-being and family situations of children.

An international research center report card published in 2007 ranked OECD countries on different dimensions. Depending on data availability, between 19 and 25 countries were included in the comparisons. The United States had a relatively low percentage of children reporting low family affluence (ranking sixth best) and was eighth best in the percentage of young people (age 11,13, and 15) "liking school a lot." However, the United States also ranked

- 21st with a relatively high percentage of children living in single-parent families,
- 21st with a relatively high percentage of children living in stepfamily structures,
- 22nd with a relatively high percentage of children reporting less than ten books in their home,
- 20th with a relatively low percentage of children eating breakfast each school day,
- 23rd with a relatively low percentage of children eating their main meal with their parents around the table several times a week,
- 18th with a relatively low percentage of young people age 11, 13, and 15 rating themselves above the middle of the scale in life satisfaction, and
- 20th in the overall average ranking across the different dimensions of child well-being addressed by the report card.

The 2009 OECD report on PISA also notes that for the United States, the gap in performance between students in single-parent families versus other family arrangements is "particularly large." The gap was found to be 23 points, which equates to about a half a year of schooling. The average gap across OECD countries was five points.

Findings From the PISA Study May Help Identify Points of Emphasis for Early Reading Instruction

The 2009 PISA report identifies a number of factors or circumstances which appear associated with 15-year-old student performance in reading across countries. Several of these could begin to

be (or in some cases can only be) addressed in grade three or before, including

- *Student knowledge of appropriate reading strategies* – The OECD report on PISA results found major differences in student performance relative to their knowledge of strategies for understanding and remembering what they read, and for summarizing material. Students who make the most use of strategies for understanding and remembering material, such as underlining important information in texts or regularly discussing texts they read with others, enjoyed a large advantage on the PISA test. The report indicates that these students score an average of at least 73 points higher, or almost two full school years, compared to students making little use of these strategies. The difference in scores between students with high and low levels of knowledge of strategies for summarizing information was about 107 points. The report also concluded that "across OECD countries, if socioeconomically disadvantaged students were as aware of effective strategies to summarize information as advantaged students, the performance gap between the two groups could be 20% narrower."
- *Student enjoyment of reading* – "In all countries," students who reported the most enjoyment of reading significantly outperformed students who reported enjoying it the least; and it was students who read a wide variety of material who performed "particularly well." Girls were more likely to report enjoying reading than boys, and to be frequent readers of fiction, while boys were more likely to report reading magazines and newspapers. The OECD report estimates that for the United States, 95 percent of the existing gender gap "could be closed if boys enjoyed reading as much as girls."
- *Parental engagement* – Students whose parents reported reading more frequently to their child during the first year of primary school performed better than those whose parents reported engaging in this activity infrequently.
- *Preschool education* – The OECD report states that "across all participating countries, school systems with a higher proportion of students who had attended pre-primary education tend to perform better."

Chapter 2

State SOL Tests Are Used to Assess Third Grade Reading Performance

In Summary

The Virginia Standards of Learning (SOL) reading test is the only test for third grade reading that is given by all schools and school divisions and taken by the vast majority of Virginia students. Between 2007 and 2010, statewide pass rates for third grade reading on the SOL ranged between 80 and 86 percent, representing a considerable increase from levels seen a decade before. The Board of Education has set an ambitious goal of a 95 percent pass rate. Study findings with statewide applicability regarding third grade reading SOL scores include (1) the passing and advanced levels set for the 2010 SOL test appear to have been reasonable approximations of the extent to which students were at or above grade level proficiency, (2) DOE needs to more clearly explain how adjustments in test scoring are made after the point when the test is administered, and (3) testing third grade students in four subject areas, which exceeds the number of tests in fourth grade, can be an obstacle to giving reading the attention needed to further increase performance and places particular stress upon third grade teachers.

Toward the end of the school year, the vast majority of Virginia public school students are assessed using the State's Standards of Learning (SOL) tests. These tests measure student achievement of academic standards which are developed by the State. The SOL tests were first administered to Virginia public school students in 1998, and have been administered each year since then to assess academic achievement and, more recently, to document Adequate Yearly Progress (AYP) as required by the federal No Child Left Behind Act. Students take SOL tests in English and math in third through eighth grade and at the end of certain high school classes. Additionally, students take SOL tests in science and history/social studies in third, fifth, and eighth grade and at the end of certain high school classes.

OVERVIEW OF THIRD GRADE READING SOL TESTS

The English SOL test administered at the end of the third grade is a test of reading achievement. The test contains 35 multiple choice questions which count in determining the student's score. (An additional seven questions are included as trial questions for possible future use, and do not count in the student's score.) Depending upon the number of questions answered correctly, each student receives a scaled score ranging from 0 to 600. On the 2010 reading SOL, a score of 311 to 399 was considered a basic (but not passing) level of achievement. A score of 400 to 499 indicates reading profi-

ciency, and is a passing score. A score of 500 and above not only passes but is also considered advanced.

After the SOL test has been administered and the results have been released, the Virginia Department of Education (DOE) "releases" the test by making it available to the public on its website. A copy of the spring 2010 third grade reading released test is provided in Appendix C.

The released tests from 2007 through 2010 were reviewed to identify some of the basic similarities and differences between the test years. In each of the years, the test contained four passages that the student must read. Three of the four passages are stories or articles. A fourth passage is in a different format, such as flier for an event, or a recipe with accompanying directions. Certain subjects or themes for the stories or articles have recurred:

- Interesting animals – "Scared Stiff" (2007), an article about fainting goats, and "Speedy and Spotty" (2010), an article about cheetahs,
- Learning a sport – "Shootin' Hoops" (2007), a story about a girl learning to shoot free throws, and "The Kid Who Could Play Tennis" (2008), an article about Arthur Ashe Jr. learning tennis as a child,
- Making friends with a new kid in school – "Taj and Berto" (2007) and "The Boy in the Back" (2008), both stories about a student befriending a new student at their school from another country,
- Taking on responsibilities and meeting a challenge– "A Summer to Remember" (2009), a story about a boy who helps his fisherman father trap crabs for the summer, "Special Jobs" (2009), a story about a girl reluctant to assume the classroom helper role of taking care of the class's rabbit, and "Twists and Turns" (2010), a story about the people of a village helping their pretzel maker overcome obstacles in order to enter a contest, and
- Family life – "Clean Your Room" (2008), a story about two friends each required by their parents to clean their rooms before they could get together, and "Pass the Milk" (2010), a story about family members at the breakfast table on the first day of school.

Table 7 provides some basic descriptive information and statistics for the stories and articles that were part of the tests between 2007 and 2010. As indicated in the table, there is some consistency across recent years in the quantity of text to be read, as indicated by the number of sentences and words in the stories. The maxi-

Table 7: Descriptive Data on the Three Stories or Articles Used as a Major Portion of Each Third Grade Reading SOL (2007 to 2010)

	2007	2008	2009	2010
Total Sentences (three of four passages)	126	130	114	118
Total Words (three of four passages)	1,095	1,093	1,124	1,132
Average Number of Words Per Sentence	8.69	8.41	9.86	9.59
Mean Number of Syllables Per Word	1.25	1.29	1.27	1.31
Mean Grade-level Estimates				
-- Flesch-Kincaid	2.6	2.9	3.2	3.7
-- Spache	3.2	3.0	3.1	3.4

Note: Passages in the tests which were not in story or article form, such as recipes or flyers, are not included in the calculations.

Source: JLARC staff review of released tests and use of on-line calculators to estimate Flesch-Kincaid and Spache grade-level readability levels.

mum difference in the number of sentences to be read was 12, and the maximum difference in the number of words was 39. The SOL tests in 2009 and 2010, though, were characterized by somewhat fewer sentences as well as more words, and thus had somewhat lengthier sentences. This contributes to the fact that statistical measures of the grade-level difficulty of texts (the Flesch-Kincaid Grade Level Readability Formula and the Spache Readability Formula) accord a higher grade-level reading rating for the 2010 test than the other years.

One of the aspects of SOL reading tests that academic experts generally liked is the focus of questions upon comprehension.

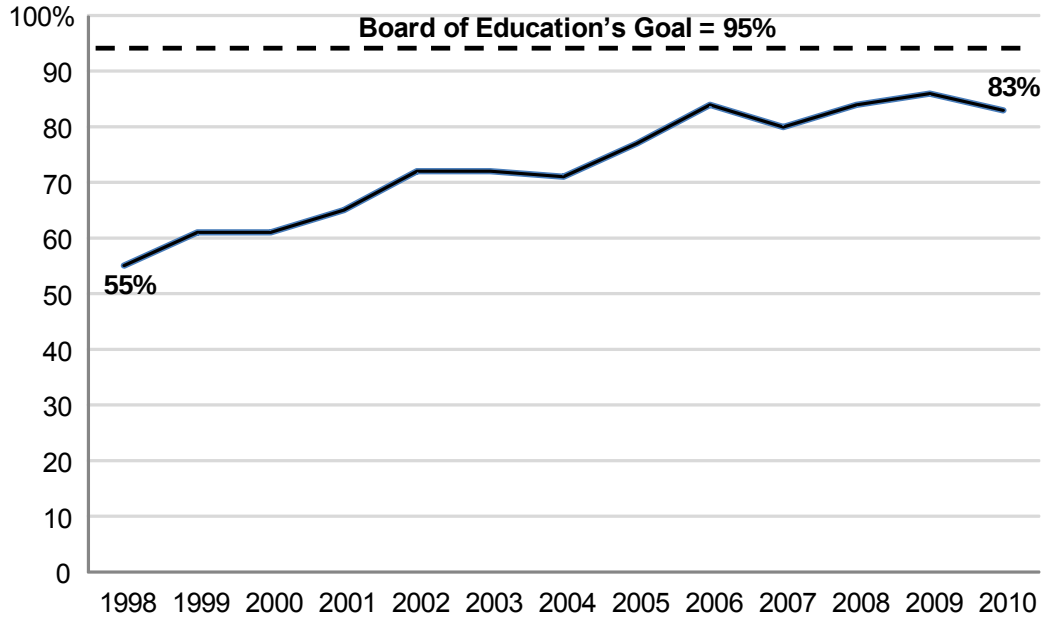
According to reading experts at Virginia universities, a strength of the reading SOL is its focus on comprehension. Articles, stories, fliers, recipes, or other texts are followed by several questions that probe the student's understanding. As called for in the SOL test blueprint, in each year between 2007 and 2010, 27 of the 35 questions (77 percent) were designed to assess student comprehension of the material. Eight questions were designed to assess the student's ability to use word analysis strategies and reading information resources.

In 2010, 25 or more questions out of 35 needed to be answered correctly to achieve a passing score. A failure to pass the test does not mean that a student cannot move on to the fourth grade. Education literature and experts advise that students should rarely be held back in the early grades, as research indicates that this is not usually beneficial for the student. Based on school division responses to a JLARC staff survey, instead of being held back students who do not pass the third reading test are recommended to attend summer school or identified for reading intervention at the start of the next school year. These recommendations may not be solely based on the SOL result, as other factors may be taken into account.

PASS RATES ON THIRD GRADE READING SOL INCREASED SUBSTANTIALLY BUT ARE BELOW STATE GOAL

The third grade reading pass rate in Virginia rose from 55 percent in 1998 (the first year of the test) to percentages in the 60s from 1999 to 2001, percentages in the 70s from 2002 to 2005, and percentages in the 80s from 2006 to 2010 (Figure 2). The highest statewide pass rate achieved through 2010 was 86 percent in 2009. The pass rate in 2010 was 83 percent.

Figure 2: Third Grade Reading SOL Pass Rates Increased From Spring 1998 to 2006 and Have Been Between 80 and 86 Percent in Recent Years

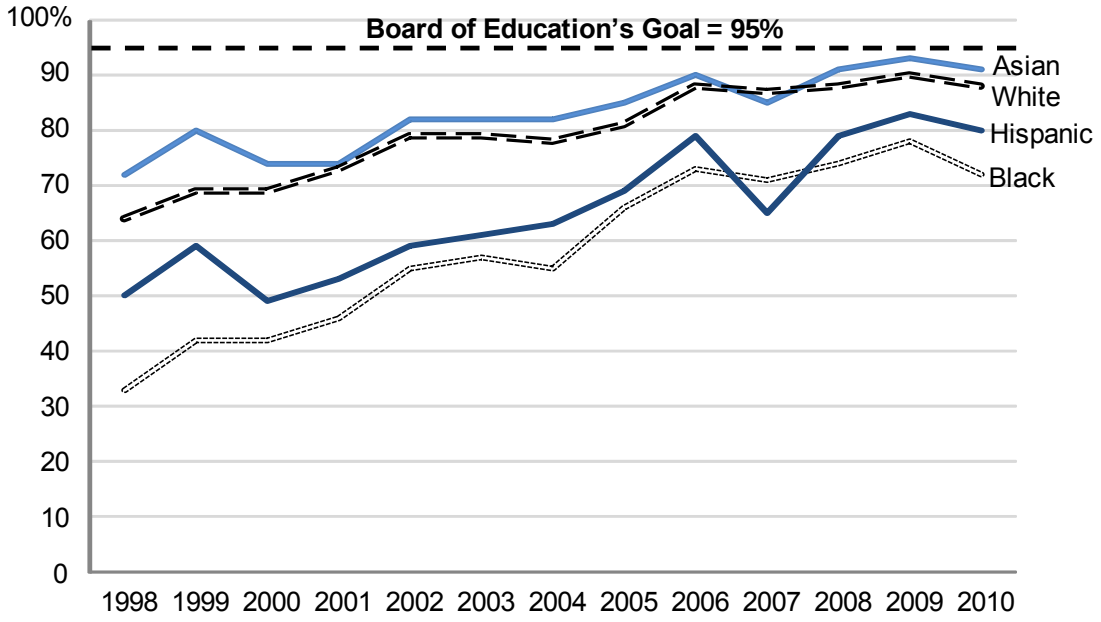


Source: Data available on DOE website.

Figure 3 shows the results for the most populous racial groups. There have been differences in the pass rates and the extent of gains made among students of different races. During the past three years, the mean pass rate has been 92 percent among Asian students, 89 percent among white students, 81 percent among Hispanic students, and 75 percent among black students.

On the other hand, the most dramatic gains in pass rates since 1998 have been by black and Hispanic students. The three-year mean pass rate for black students from 2008 to 2010 was 2.26 times the 1998 pass rate. The three-year mean pass rate for His panic students was 1.61 times the 1998 pass rate. The figures for white and Asian students were 1.38 and 1.27 times the 1998 rate.

Figure 3: Change Over Time in Third Grade SOL Reading Pass Rates by Student Race



Source: Data available on DOE website.

On the JLARC staff survey of school divisions, divisions were asked if they had conducted a review to assess what factors appeared to account for any substantial changes in their third grade reading results from 2009 to 2010. Factors potentially explaining a decrease in scores that were cited by school divisions varied, and included

- in schools initially implementing online SOL testing, inexperience among students with online testing and student difficulties understanding the online format,
- a shift from paper and pencil testing to online testing in which the division also opted to shift from two-day to one-day testing, requiring more stamina among students,
- an increase in the number of items required to pass the test,
- insufficient focus on reading at some schools,
- belief that the rigor of the test had increased,
- insufficient intervention and data-driven support for students with weaknesses in some schools, as whole group classroom instruction was the focus,
- curriculum alignment concerns as well as a concern that the language arts and reading series used in the classrooms had become outdated,

- some increases in the socioeconomically disadvantaged population and transient students lacking basic skills, and
- a decrease in the use of alternative testing for students with special needs.

The Virginia Board of Education (BOE) has established a performance measure goal of a 95 percent pass rate for the third grade SOL reading test. (DOE's strategic plan for the 2010-12 biennium calls for the goal to be reached by 2012.) In July 2007, the board published a goal, performance objective, and performance measure for third grade reading as part of a broader set of guidelines. The guidelines were for "An Incentive Program to Encourage and Recognize School Accountability Performance and Competence to Excellence" (in the State Administrative Code, 8VAC 20-131-325). The guidelines set up an incentive program known as the Virginia Index of Performance program (VIP) to recognize and reward schools making progress toward measurable goals and objectives. To identify schools and divisions of educational excellence, a point system and award criteria were developed by BOE and revised in 2009. Awards have been made each year from 2008 to 2011. The following aspects of VIP specifically pertain to third grade reading:

- Goal: Every child reads on grade level by third grade,
- Performance Objective: "Increase the percentage of third graders reading on grade level", and
- Performance Measure: "Percentage of students passing the Grade 3 state reading assessment increases annually (95 percent State goal).

With the statewide average reading pass rate for third grade students ranging from about 80 to 86 percent between 2007 to 2010, substantial progress would still need to be made to bring the average up to 95 percent. Across the 132 school divisions operating elementary school programs, one school division achieved a 95 percent reading pass rate in 2010 (Patrick County, with 174 students taking the test and a 95.4 percent pass rate). Ninety-one of the over 1,100 elementary schools with third grade classes (less than ten percent) achieved at least a 95 percent pass rate in 2010. The feasibility of this goal is discussed further in Chapter 3.

Board guidelines also state a goal of having all students reading on grade level. However, the guidelines do not specifically define what threshold would be used to determine minimum grade-level performance.

Preferred Method for Determining Reading Grade Level of Individual Students

The teacher has the student read "graded" texts of increasing difficulty, counting errors and checking for comprehension. The grade level of the student is "generally considered to be the highest level of text that a reader can read with at least 95 percent word accuracy and 75 percent comprehension." (Cunningham, Patricia M. and Richard L Allington, *Classrooms That Work: They Can All Read and Write*, 2011).

PASS AND ADVANCED LEVELS FOR THE 2010 SOL APPEAR TO REASONABLY APPROXIMATE GRADE-LEVEL PERFORMANCE

The mandate for this study requests information on the number of Virginia third grade students reading at grade level. However, there is no universally accepted threshold for what meets, exceeds, or falls short of what one should expect in reading from third graders.

Methods to Approximate the Reading Grade Level of Students

Companies in the education business have "graded" many books or passages that are given to third graders to read. The grade is based on the extent of the reading challenge presented by the text. If the grade levels for the texts are being set appropriately, then the grade level of a student can be assessed by having the student read aloud from the graded passages (see sidebar).

According to the literature on assessing reading skills, such repeated, teacher-administered oral testing is a better approach for determining student grade level than the use of a standardized question-and-answer testing package producing a grade-level score. And in theory, the number of Virginia third grade students reading at grade level could be based on an aggregation of results from such oral testing, done within a particular time window. However, while teachers in Virginia do employ this testing approach, there is no statewide data available on these results.

According to the literature, relying upon grade-level results for a student from single administrations of standardized tests is the least desirable method for assessing student reading skills. For example, a recent edition of a guide on assessing reading instruction calls the grade-level figure "the worst norm" reported on achievement tests. Criticisms include concerns about accuracy (various factors could disrupt getting a result reflecting the student's "true" reading ability) and interpretation. Grade-level scores sometimes yielded by the tests that are substantially below or above the reading level toward which the test was oriented are problematic, as the difficulty of passages included in a test for third graders is not the same as the difficulty of passages which would be given to children in a much lower or much higher grade.

However, it is important to distinguish the type of grade-level analysis which is to be conducted. If the analysis is of group results (students across the State or within divisions or schools) rather than individual students, then the measurement error concern is greatly reduced. Further, an analysis that only seeks to differentiate whether student groups are at, below, or above grade level is not impacted by the magnitude of the most extreme scores.

For this study, several different thresholds of performance on the 2010 SOL reading test were considered to potentially estimate the number of Virginia students at, below, or above "grade level" statewide. One approach to making this distinction is to use the SOL proficient and advanced thresholds. While the proficient score on the grade three reading SOL test was not set specifically to represent grade-level reading proficiency, DOE staff indicate that it is intended to represent "satisfactory" performance, and based on this understanding, DOE has used the passing level as a proxy floor for reading on grade level. Some potential alternatives besides accepting the existing SOL thresholds of 400 and 500 were also considered:

Lexile Scores

Lexile scores are a widely used system for rating student reading levels and for recommending appropriate books that will help improve student's reading skills and comprehension.

- A student placement guide by a global education company (Scholastic Inc.) containing lexile score ranges and associated grade levels. The guide separated grade-level performance into three categories of proficiency: low proficient, proficient, and high proficient. Based on a DOE conversion table between lexiles and SOL test results, the guide's three categories of grade-level performance roughly begin, in terms of SOL scores, around 365, 435, and 475.
- Results from the JLARC staff survey from 51 school divisions that provided the percentage of their students testing at, above, or below grade level according to a reading assessment other than the SOL recently administered to third graders. Based on cross-walking these percentages to the cumulative percentage frequency of scores by students on the SOL, the resulting mean floor for grade level was very close to SOL passing (401.9). The ceiling was also close to but somewhat above the SOL advanced level (518.5).
- Also based on reading assessments other than the SOL, 25 divisions provided their own approximation of the SOL ranges associated with performance at, above, or below grade level. The aggregate results from these approximations suggested a floor for grade-level performance similar to the "low proficient" threshold of the Scholastic Inc. placement guide, but a ceiling higher than both the "high proficient" threshold and the SOL advanced score (the division mean for a ceiling was 557). The relatively low and high thresholds indicated by this analysis reflected the fact that a majority of this subset of divisions reported a floor for grade-level performance below 400 and a score of 600 as being within grade-level performance.

Number of Students Reading At, Above, or Below Grade Level Based on Varying Plausible SOL Thresholds

Some potential thresholds identified by the analysis, and the number of students within the ranges set by the thresholds, are shown in Table 8. Estimates for the number of students at grade level range from 27,330 to 65,563 (see the table column for students "within the range.") The range for students at or above grade level (sums of the number of students "within the range" and "above the range") has much less variation. The figure ranges from 61,629 to 79,675 or from 70 to 91 percent of tested students.

Table 8: Potential Thresholds for Estimating Number of Third Graders Reading At, Below, or Above Grade Level

Source	Range of SOL Scores	Below the Range		Within the Range		Above the Range	
		Number	Percent	Number	Percent	Number	Percent
SOL Proficient	400-499	15,229	17.4%	37,832	43.3%	34,299	39.3%
Student Placement Guide "Low Proficient" Floor	365-499	7,685	8.8	45,376	51.9	34,299	39.3
Student Placement Guide "Proficient" Floor	435-499	25,731	29.5	27,330	31.3	34,299	39.3
Grade-Level Percentages From School Divisions	400-518	15,229	17.4	46,169	52.8	25,962	29.7
Approximations of SOL Ranges From School Divisions	365-557	7,685	8.8	65,563	75.0	14,112	16.2

Source: JLARC staff analysis of 2010 SOL data from DOE for 87,360 third grade students; DOE conversion table for lexile scores from Scholastic Inc. student placement guide to third grade reading SOL scores; JLARC staff survey of school divisions, spring 2011.

School Division Views Differ on Minimum SOL Score Suggesting Fourth Grade Preparedness, but Most Indicated 400 or 435

The grade level question is basically geared toward determining whether students "are where they should be" in terms of their skill relative to their grade. To gain some further perspective on the issue, and given that the SOL is administered toward the end of the school year, the JLARC staff survey asked school division reading coordinators the question:

> To be reasonably well-positioned for handling grade-level content at the beginning of fourth grade, what is the minimum score that you think students need to achieve on the third grade reading SOL?

The survey provided five choices: 365, 400, 435, 475, or an "other" score the respondent might wish to designate. Most divisions responded that minimum scores of between 400 and 435 were suggestive of a student being reasonably well-prepared (Table 9). Few

divisions indicated that a score less than 400 would be appropriate. Most divisions did not indicate that a score above 435 would be necessary to signal preparedness, although about one-fifth did. The propensity of a division to see a higher score as needed did not appear to be linked to a higher propensity among division students to achieve that score.

Table 9: About 75 Percent of Division Survey Respondents View SOL Reading Score of Between 400 and 435 as Indicative of Reading Preparedness for Fourth Grade

Potential Threshold Score for Well-Prepared	Percent of Respondents
365	1.8%
400	33.3
420 to 425	2.7
435	40.6
450	0.9
475	20.7

Source: JLARC staff analysis of school division survey, spring 2011.

With substantial support, divisions have seen third graders scoring below 400 make progress and do well in fourth grade. For example, regarding the minimum SOL score needed, a division reading program coordinator commented on the JLARC staff survey:

> This would vary. A student could make 375 on the 3rd grade reading test and, if given the proper support, make substantial progress in attaining grade-level reading competency. [For] most students, however, I feel like a 400 would be the minimum score.

Based on interviews with division staff, principals, and teachers, it appears school personnel view students as being in at least three categories when it comes to preparedness for the next grade level:

- students who are struggling readers and will clearly need major support to make progress;
- students whose reading skill places them "on the bubble"—they are about where they need to be, but still need to be monitored and may still require some extra support in fourth grade; and
- students whose reading skill level leads to a fairly confident expectation that they are ready to handle the reading demands associated with fourth grade content.

Scores between 400 and up to about 435 were seen by a number of school staff as "on-the-bubble" scores. To be more confident about a student's level of preparedness, these staff indicated that they like

to see students answer a few more questions correctly than was required for passing. Still, the evidence reviewed for this study indicates that the passing and advanced thresholds for the reading test are not unreasonable indications of grade-level performance. The floor for grade level could be set within a range of about plus or minus 35 points of 400; but the case for minus 35 points is questionable and the case for plus 35 points is not clear-cut. The threshold of 500 might arguably be too low for distinguishing the advanced level from at grade level. However, for the version of the SOL test most students took, Core 1 (see sidebar), a 500 score on the paper/pencil test in 2010 meant the student answered 32 of 35 questions correctly. Also on the Core 1 paper test, answering 33 questions correctly was scored a 542, 34 questions was a 590, and all 35 was a 600.

Third Grade Reading Test Has "Core 1" and "Core 2" Versions

There were two versions of the 2010 grade 3 reading test developed for administration to students in a paper / pencil format: Core 1 and Core 2. Most students took the Core 1 version of the test. However, some students took the Core 2 version in the paper pencil format and others took Core 2 online.

NUMBER OF CORRECT RESPONSES NEEDED TO PASS THE SOL CAN CHANGE FROM YEAR TO YEAR

To achieve a passing score (a scaled score of 400 or more) or an advanced score (500 or higher), the number of questions that needed to be answered correctly varied during the period from 2007 to 2010. For the Core 1 paper test (the tests released to the public), Table 10 shows the number of correct answers that are associated with the higher scaled scores. In 2007 and 2008, students had to answer 23 of 35 items (66 percent) correctly to pass. In 2009, the required number of correct responses was 24 of 35 (69 percent) and in 2010 it was 25 (71 percent). For the 2011 Core 1 paper test, 23 questions had to be answered correctly to pass, and 31 questions needed to be answered correctly to achieve the advanced level.

The impact of changes in the number of correct responses needed for the 2009 and 2010 tests upon the statewide average pass rate and upon the number of students passing the test is shown in Table 11. With the change in the number of items which needed to be answered correctly, the pass rate in 2010 fell by three percentage points from the 2009 level (85.6 to 82.6).

During the course of this study, some school divisions expressed concern about the fact that the number of correct responses required to pass has changed in recent years, and questioned whether the adjustments are done appropriately. They indicated that they believe that the number of correct responses required to pass the test was not being determined prior to test administration, but rather was adjusted based on results from the students taking the test. Their concern was that if students performed better on the new test, the number of correct responses required to pass would be increased on the assumption that the test was easier, but instead the improved results could be due to improvements in instruction.

Table 10: Number of Correct Answers to Achieve a Passing or Advanced Score Increased in 2009 and 2010

Correct Answers	2007 Score	2008 Score	2009 Score	2010 Score
22	399	397	381	379
23	**408 (passing)**	**406 (passing)**	390	389
24	418	415	**400 (passing)**	398
25	427	425	409	**408 (passing)**
26	438	435	420	419
27	449	446	431	430
28	461	458	443	443
29	474	471	456	456
30	490	486	471	472
31	**507 (advanced)**	**503 (advanced)**	489	490
32	529	525	**511 (advanced)**	**512 (advanced)**
33	558	554	540	542
34	600	600	587	590
35	600	600	600	600

Source: Charts for the Core 1 paper form of the SOL test included at the end of Virginia DOE released SOL tests for spring 2007 to spring 2010.

Table 11: Relationship of Changes From 2008 to 2010 in the Number of Correct Responses Required on the Statewide Pass Rate and the Number of Students Passing

Test Year	Correct Responses Needed	Percent of Students Passing	Pass Rate Percentage Based on 23 Correct Responses	Percent of Students Above 23 Not Passing	Number of Students Above 23 Not Passing
2008	23	83.3%	83.3%	N/A	N/A
2009	24	85.6	88.2	2.6%	2,280
2010	25	82.6	87.4	4.8	4,215

Source: JLARC staff analysis of DOE student-level data on performance on the 2008 to 2010 SOL third grade reading tests.

DOE's Stated Intent for Adjustments Is Reasonable, and DOE Indicates Methods Used Are Consistent With High-Stakes Testing Programs in Other States

In August 2011, DOE posted a revised statement on its website explaining why the raw scores required for the "pass/proficient" and "pass/advanced" thresholds can vary. The intent that is stated in the document for making adjustments seems reasonable:

> Each new version or form of the test is developed with the intention that it is the same difficulty level… Several statistical methods are employed during the test construction

> process to try to make any new forms equal in difficulty to the original form. However, the difficulty level of newly developed forms may vary slightly and the raw score required for an achievement level of pass/proficient/ or pass/advanced must be adjusted accordingly…
>
> Scaling and equating are the tools used to ensure that each student receives a fair and equitable score on the test. The scaling and equating methods used by Virginia's testing contractors to create the equated scaled scores are used by all high stakes testing programs.

Technical Report Explains Year-to-Year Linkage Between Test Items Which Can Help in Assessing Change in Test Difficulty

While the intent for adjusting the number of items is reasonable, DOE's August 2011 document does not explain how the process actually operates to ensure that adjustments made are triggered by conclusive changes in test difficulty. A document on DOE's website, *Virginia Standards of Learning Assessments Technical Report, 2008-09 Administration Cycle*, does help explain (but does not fully address) how the process works. The technical report is helpful in explaining the role of two different versions of the SOL test and the "field test" and "anchor" passages and associated questions contained in the tests. Understanding these roles is helpful for understanding the potential basis for making adjustments in the number of items required to pass the test.

Field Test Reading Passages and Associated Questions Provide Material for Future Tests. Some questions on the SOL test do not count toward the student score because the questions are asked on a trial basis to help consider their appropriateness for future use. Because most SOL reading questions are tied to reading a passage, the field test is both for reading passages and questions associated with the passages. The technical report states:

> To ensure that sufficient high-quality test items are available for the development of new operational assessments each year, approximately 220 items are field tested annually for each grade and subject… One operational test form may contain anywhere from one to 18 different sets (versions) of field-test items. In order to field test the number of items needed to replenish the item bank in each grade level and subject it is necessary to have these multiple variants of a single operational form.

For the 2010 third grade reading test, students received tests with a field test passage and seven field test questions. While each student was only given one field test passage, across the students there were various passages (with their associated questions)

which were field tested. None of the field test items count in the student score.

A Version of the SOL Test ("Core 2") Contains Passages and Questions That Are Used the Following Year, Providing a Linkage Between Tests. The technical report indicates that for SOL tests at various grades and of various subjects, there are two to three basic or "core" versions of the test which are administered. For third grade reading, there are two core versions. Having two core versions enables the department to release SOL tests to the schools and the public while also having some commonality between years in the passages that are read by some students and the questions they respond to. The following explains the role and interplay of the Core 1 and Core 2 tests:

- The Core 1 test contains only passages and questions which at the time of test administration have not been previously released to the schools and the public. The content of this test is only released to the schools and the public after test scoring has been completed and the results are made public.

- The Core 2 test is used as a source of "anchor items" for the next year's test. Two anchor sets, each consisting of a reading passage and its accompanying items, are selected to be used on the next year's test forms. The passages and questions are referred to as anchors because they appear in identical form in more than one test year and provide a commonality or linkage between test years. One of the two anchor sets from the Core 2 test will appear in the following year's Core 1 test, and the other anchor set will appear again in the following year's Core 2 test. Unlike Core 1, the content of Core 2 tests is not released each year.

- The Core 2 anchor set that is used as part of the next year's Core 1 test becomes known to the public once that year's Core 1 test is released. Consequently, as the technical report states, this anchor set is "lost to the program for future use."

- The other Core 2 anchor set appears as part of the Core 2 test in the following year, providing a link. Since the content of Core 2 tests are not released to the schools and the public, the Core 2 anchor sets can be maintained across years.

DOE Needs to Describe How Results From a Subset of Test Takers Are Used to Adjust the Number of Items Required to Pass

The method currently used by Virginia for equating the difficulty of different versions of the SOL test is called "post-equating." This term is used because the method employs results from students during a live test administration. (A "pre-equating" method is based on field test data only.) To ensure that sufficient numbers of students take each version of the grade three reading test to allow for equating using results from the live administration, a sampling plan is developed for each spring administration of the test. Sampling plans are based on the number of students each school indicates will be taking the grade three reading test in either the online or paper test mode. The sampling plan assigns most school divisions either the Core 1 or Core 2 form of the test.

DOE staff indicate that as tests are completed and returned,

> results from the first 3,000 students are generally used to make any necessary adjustments. . . because this number of responses typically provides a good representation of the students who were assigned this test form in the sampling plan. However, testing experts from Virginia's testing contractor check the demographic characteristics of the students in this sample and ensure that both high performing and low performing students are represented.

JLARC staff requested data from the department on the demographics of the students which formed the equating subsets. DOE data indicates that in total, 13,016 students were included in the subsets used for equating purposes. There were 4,925 students which took a Core 1 paper test, 4,169 students which took a Core 1 test on-line, and 3,922 students which took a Core 2 test on paper. The data provided by DOE included gender and race but did not address economic disadvantage. The department notes that free and reduced price lunch status was not used in reviewing equating samples in spring 2010 or earlier (but began to be used with the spring 2011 test). Table 12 shows the percentages of students by race in the equating samples by test form compared to the population of students taking each test form. As indicated in the table, while there was considerable variation in the percentages of students by race in the sample versus the population for the Core 1 test, there was substantial similarity in Core 2 tests used in equating.

Table 12: Percentage of Third Grade Students by Race in Test Form Equating Samples Compared to the Full Population

Student Race	Percent of Students in Core 1 Paper Test Sample	Percent of Students in Core 1 Population	Percent of Students, Core 2 Online Test Sample	Percent of Students, Core 2 Online Population	Percent of Students, Core 2 Paper Test Sample	Percent of Students, Core 2 Paper Population
White	67%	51%	68%	69%	47%	51%
Black	26	25	21	18	45	46
Hispanic	4	11	6	7	5	6
Asian	2	9	3	3	2	4
Other	2	4	3	2	1	3

Source: JLARC staff analysis of data for the 2010 third grade SOL reading test provided by the DOE assessment unit.

As noted previously, the sampling plans used to assign students to Core 1 paper, Core 2 paper, or Core 2 online are based on the number of students each school indicated would be taking the grade three reading test in either the online or paper test mode. Table 13 shows the number of students assigned to take the Core 1 paper, Core 2 paper, and Core 2 online forms based on the participation counts provided by the school divisions (Planned N). In addition the number of students actually tested is shown in the "Actual N" column.

Table 13: Numbers of Students Indicated by School Divisions as Scheduled to Take the Grade 3 Reading Test Compared to Number of Students Actually Tested

	Planned N	Actual N	Variance From the Plan
Core 1 Paper	42,571	34,446	0.19
Core 2 Paper	24,044	19,669	0.18
Core 2 Online	19,324	17,986	0.07

Source: Data from the 2010 third grade SOL reading test provided by the DOE assessment unit.

The demographic characteristics of the equating sample were reviewed against the characteristics of the projected population of students taking Core1 paper, Core 2 paper, or Core 2 online. Based on the projected characteristics of the students assigned to Core 1 paper/pencil, the Core 1 equating sample was judged to be appropriate. However, when testing was completed, it became apparent that about 8,000 fewer students than were projected were administered the Core 1 form in paper. This variance indicates that the equating process could likely be improved if there is a greater match between the participation counts by test mode that are submitted by school divisions and actual practice.

In response to a question about how the sample tests on third grade reading were used in 2010, DOE's response was that the tests "were used to calibrate the 2010 test items, create the 2010 theta scale and anchor it back to the 2009 scale." DOE needs to

provide a more detailed and non-technical explanation than this for how results from the subsets of students are utilized to determine the number of questions which need to be answered to achieve a passing or advanced score.

For example, DOE should expand upon its August 16, 2011 revised explanation for SOL cut scores which appears on its website. The document should be expanded to

- explain that the approach to equating and scaling tests that is used in Virginia is known as Item Response Theory (IRT), and this method is widely used,
- explain that implementation of IRT is facilitated by the fact that a subset of SOL test takers each year complete a version of the SOL test which contains a passage and questions which appear across years and provides a linkage between tests,
- explain that IRT is a method that enables an examination of how new test takers performed on these various individual test items, in order to estimate the underlying "ability" of the new test takers (or group of test takers), and
- explain in broad concept how the estimated ability and test performance of students in the SOL test equating samples is utilized to determine the number of items which need to be answered correctly in the different test forms to achieve at or above the pass/proficient and pass/advanced thresholds.

This information should be communicated to school divisions so that division reading coordinators, principals, and other staff can more fully understand how the process works, and have confidence that the adjustments are justified.

Recommendation (1). The Department of Education should revise its online document explaining Standards of Learning (SOL) cut scores to indicate, in general, how Item Response Theory, in combination with the results from subsets of new test takers, is utilized to (1) estimate the "ability" level of new test takers and (2) determine the difficulty level of SOL test versions and the number of correct responses required to achieve a passing or advanced score on the different test versions. The department should make the availability of the revised document known to the divisions through a Superintendent's Memo.

NUMBER OF SUBJECTS TESTED IN THIRD GRADE IS A CONCERN

The mandate for this study requires that the review consider "ways to improve and sustain the early reading proficiency of third grade students." One of the means that could be considered is to enable teachers and students to focus more extensively on reading skills during the third grade year. As will be discussed further, best practices for teaching reading are time-intensive. Ideally, teachers are able to spend substantial time working on reading skills with small groups of students during reading block time. This means that reading block time needs to constitute a substantial portion of the day.

To enable third grade classrooms to place more attention upon the development of reading skills, one action the State could take would be to keep the number of SOL tests administered in third grade to two—reading and math. In interviews conducted for this study, concerns were expressed regarding the extent of testing for third grade students. Third grade is the first year in which the students take any SOL test. In addition to facing the SOLs for the first time, third graders also have to take the SOLs in four subjects: reading, math, science, and history. School staff pointed out that this is more subjects than are tested in fourth grade, when only math and reading are tested.

One suggestion, initially raised by a classroom teacher but also receiving a favorable reaction from other school and division staff interviewed, was the possibility of phasing in subject area SOLs. Rather than limiting the number of tests to two in fourth grade, that limit could be applied instead to third grade. One more subject area could then be added in fourth grade. Finally, all four subjects would be tested in fifth grade.

This suggestion appears to be reasonable. A review of practices in other states indicates that most states have their third grade students taking a statewide examination in just reading and math. In Virginia, this approach could help enable third grade teachers, particularly in schools with struggling readers, to focus even more on reading skills.

The approach would also help more evenly distribute the pressure placed upon students and teachers in the elementary grades. Under the current situation, it is well known in elementary schools that third grade students and teachers experience a higher level of test-related stress, as students mostly eight and nine years old face the SOLs for the first time and have to contend with four test subjects. The following case example illustrates the potential impact of these requirements on the classroom.

Case Study – Teacher Concern About Four Subject Area Tests in Third Grade

In an interview with two third grade teachers at one of the schools visited by JLARC staff, the teachers noted that with four subjects being tested for the SOLs, "there is so much content to cover. It leads to rushing to get the information to them." "You become a taskmaster," one of the teachers said. She noted that for SOL purposes, third grade students who need help with their reading skills are spending time in class trying to learn specific content about Mali culture for the history SOL.

In 2009, the Board of Education considered eliminating the grade three history and social science tests. According to DOE staff, the idea was not ultimately implemented because it was seen by some organizations in the state as undermining the importance of teaching history in school. However, the importance of history/social studies would still be recognized through testing in upcoming grades. The nature of the concern is that reading is a key basis for all other content learning, and at the third grade level, students may not be best served by having four SOL tests, potentially diminishing the time and attention that is available for reading skill instruction. As one potential way to bring greater focus upon reading skill development in third grade, the Board of Education and the General Assembly may wish to revisit this issue.

Recommendation (2). To help schools bring greater focus to reading skill development in third grade, the Board of Education should limit the Standards of Learning tests taken by third grade students to reading and math.

Chapter 3

Third Grade Reading Performance in Virginia School Divisions

In Summary

Virginia school divisions were ranked in two ways based on third grade student performance on the 2010 SOL reading test. First, divisions were ranked based on test pass rates. The five divisions with the highest pass rates were Patrick County, Scott County, Highland County, Falls Church City, and Hanover County. Second, divisions were ranked based on the extent of difference between their actual pass rate and their "predicted" pass rate. The predicted pass rate takes into account factors which have a major impact upon student performance but that are not within the division's control, such as the economic status, disability status, and race of the students. The difference between a division's actual pass rate and its predicted pass rate is a potentially better indicator of division performance than the raw pass rate. By taking into account the characteristics of students, this difference provides some indication of the "value added" by reading instruction in the divisions. The top five divisions most exceeding their predicted pass rate in 2010 were Martinsville City, Patrick County, Buckingham County, Danville City, and Charlotte County.

All school divisions except Patrick County had a pass rate below the State's 95 percent goal for the third grade SOL reading test. Divisions have varying views on whether they can achieve this goal. Large divisions more often reported that this target is unrealistic. Besides socioeconomic factors, school division survey results suggest that factors which may impact a division's ability to achieve a 95 percent pass rate include the ability of school systems to attract and retain quality teachers, intergrade cooperation, and student attitudes about the importance of reading.

The mandate for this study, Senate Joint Resolution 31 (Appendix A), expresses an interest in ways to promote widespread student proficiency in third grade reading. Consequently, the mandate requires that the review examine the extent to which third grade students are passing reading tests or are reading on grade level. The mandate requires the study to rank the school divisions based on the extent to which the third graders passed the most recent third grade reading test. This is one indicator of third grade reading proficiency.

During the data collection and analysis phase for this study, the most recent statewide reading test data for third grade students was the 2010 SOL. JLARC staff analyzed factors associated with student, school, and school division performance (test scores and pass rates) on the reading SOL test. A description of these analyses is provided in Appendix D. Pursuant to the study mandate, the greatest focus of the SOL data analysis presented in this chapter is upon issues surrounding student pass rates at the division level.

DIVISIONS WERE RANKED BASED ON THEIR PASS RATE AND A COMPARISON OF THAT RATE TO THEIR "PREDICTED" RATE

Division-level performance of third grade students on the reading SOL test was assessed in two ways. First, divisions were ranked based on their actual pass rate. The actual pass rate of divisions is important because it indicates how close or how far school divisions are from achieving widespread proficiency or pass rate performance goals. However, this measure should not be seen as a direct indicator of the effectiveness of the school division reading program during the school year under study. School divisions do not face an equal level of challenge in achieving a high pass rate, a fact which is not acknowledged in ranking divisions based on their actual pass rates alone.

Second, the divisions were ranked based on the difference between their actual pass rate and their "predicted" pass rate. To obtain predicted pass rates, statistical analysis was conducted to determine the factors which are beyond school division control and that have an impact on student pass rates. (These factors, particularly including the economic status, disability status, and race of the students, are discussed in more detail in the next section of the chapter.) A predicted or expected pass rate for each school division was computed that helps account for differing levels of challenges experienced in the divisions. Relative to the mix of students in any given division, the predicted pass rate equals the statewide average level of success among those students. Divisions scoring well above their prediction achieved a higher pass rate than is typical given their mix of students. In the same vein, divisions scoring well below their prediction achieved a lesser pass rate than is typical for their mix of students. This is a more direct indicator of the value added by the school division's reading program during the school year that is analyzed.

Based on the two methods discussed above, Table 14 provides a list of the top 20 school divisions based on their student pass rate performance on the 2010 SOL reading test. With regard to actual pass rates, only one division had a pass rate above 95 percent, which is the Board of Education's stated goal, and a total of nine divisions had a pass rate over 90 percent. With regard to divisions most exceeding their predicted pass rates, there were three divisions with pass rates more than ten percentage points higher than their predicted score. All 20 divisions most exceeding their prediction had pass rates at least five percentage points higher than predicted. Appendix E of this report includes a table with data for all school divisions showing their pass rate, their predicted pass rate, and the difference between the actual and predicted pass rates. For each of these variables, the table in Appendix E also includes a corresponding rank for all divisions (from one to 132).

Table 14: Top 20 School Divisions Based on Pass Rates for 2010 Third Grade Reading SOL Test Compared to Top 20 School Divisions Exceeding Their Predicted Rate

Rank Based on Pass Rate	Top 20 Divisions Based on Pass Rate	Pass Rate	Rank Based on Exceeding Prediction	Top 20 Divisions Exceeding Their Prediction	Pass Rate	Percent Above Prediction
1	Patrick County	95.4%	1	Martinsville City	89.9%	17.3%
2	Scott County	92.9	2	Patrick County	95.4	13.5
3	Highland County	92.9	3	Buckingham County	90.7	11.2
4	Falls Church City	91.6	4	Danville City	82.8	10.0
5	Hanover County	91.4	5	Charlotte County	89.3	9.0
6	Galax City	91.3	6	Galax City	91.3	8.8
7	Botetourt County	91.0	7	Highland County	92.9	8.4
8	Buckingham County	90.7	8	Northumberland County	88.9	8.2
9	Lexington City	90.3	9	Scott County	92.9	7.9
10	Martinsville City	89.9	10	Henry County	88.1	7.4
11	Orange County	89.6	11	Lancaster County	87.3	7.3
12	Charlotte County	89.3	12	Franklin County	89.3	7.2
13	Franklin County	89.3	13	King and Queen County	83.7	7.0
14	Loudoun County	89.3	14	Charlottesville City	84.2	6.2
15	Northumberland County	88.9	15	Amherst County	86.9	6.0
16	Wise County	88.9	16	Richmond City	76.7	5.9
17	West Point	88.3	17	Halifax County	84.8	5.7
18	Henry County	88.1	18	Nottoway County	83.3	5.6
19	Arlington County	88.0	19	Orange County	89.6	5.5
20	Washington County	87.9	20	Botetourt County	91.0	5.2
	Top 20 Average	***90.2%***		***Top 20 Average***	***87.9%***	***8.2%***
	Statewide Pass Rate	***82.6%***				
	Statewide Goal	***95.0%***				

Note: Pass rates were calculated based on students who took the 2010 third grade reading SOL test. Third grade students who took an alternate test or who were not tested at all were not included in the pass rates presented in this table.

Source: JLARC staff analysis of 2010 third grade reading SOL test data provided by DOE.

Twelve of the 28 counties shown in the table ranked in the top 20 on both lists. Divisions with high pass rates but not among those most exceeding their predicted pass rates included Arlington, Falls Church, Hanover, Lexington, Loudoun, Washington, West Point, and Wise. (These divisions all had predicted pass rates over 84 percent, making it difficult for them to rank among the top divisions exceeding their prediction.) School divisions most exceeding their predicted pass rate but with a pass rate not in the top 20 included Amherst, Charlottesville, Danville, Halifax, King and Queen, Lancaster, Nottoway, and Richmond City.

Virginia Department of Education (DOE) staff indicated that seven of the top 20 school divisions exceeding their 2010 predicted pass rate were involved in Reading First in Virginia, a federally funded program that placed reading coaches in each elementary school, and provided for extensive professional development and regular, on-site technical assistance from DOE. These seven school divisions are Amherst County, Buckingham County, Charlottesville

City, Franklin County, Halifax County, Henry County, and Richmond City. Each of these divisions received an influx of federal funds over several years, as well as extensive support for their early elementary reading program. The Reading First federal funding was discontinued in the 2010-2011 school year.

USE OF MODELS TO PREDICT PASS RATES HELPS ACCOUNT FOR THE IMPACT OF SOCIOECONOMIC FACTORS

Economically Disadvantaged Students and Students With a Disability Status

Students are identified as economically disadvantaged by DOE if during the school year (1) they are eligible for free or reduced price meals, (2) their caretaker(s) receives TANF or is eligible for Medicaid, or (3) they are identified as experiencing homelessness.

Students with one of 14 disabilities as defined by DOE are designated as having a disability status.

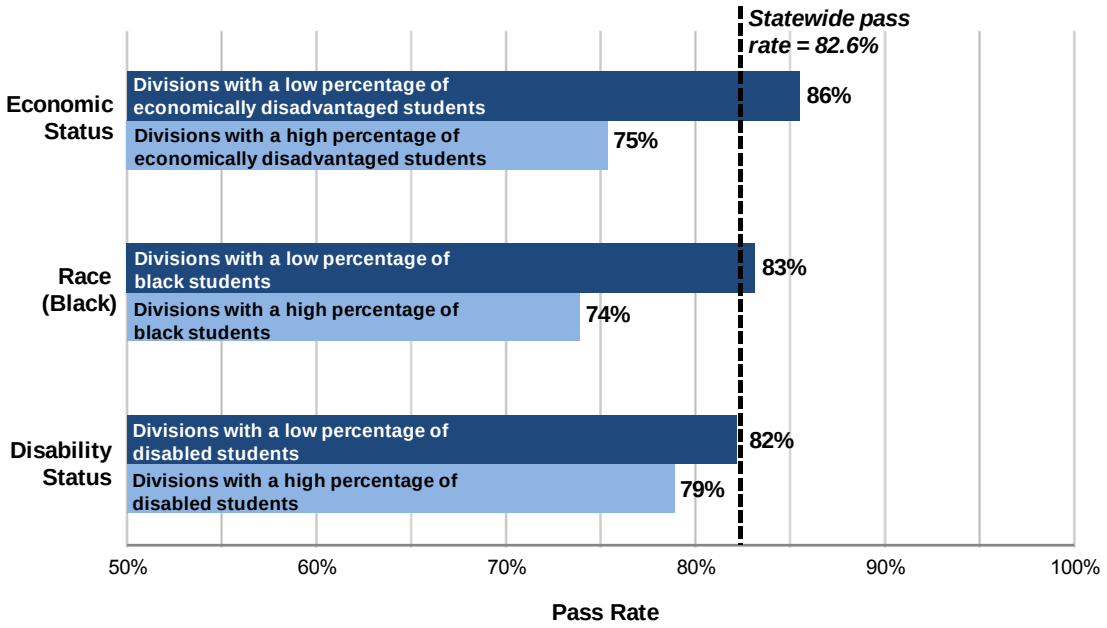
Statistical analysis indicates that a student's economic status, disability status, and race have the strongest associations with reading performance of third grade students in Virginia. These three factors, more than any others, explain the most variation in terms of whether or not a third grade student passed the reading SOL test. Four additional factors – limited English proficiency, age, mobility of students, and gender – were also associated with student performance on the third grade reading SOL test. However, these associations were not as strong as the first three factors. Therefore, this section primarily focuses on economic status, disability status, and race.

Figure 4 illustrates the difference that existed in 2010 SOL reading pass rates among divisions with relatively high and relatively low proportions of students with certain socioeconomic characteristics. For example, the one-fourth of school divisions with the least percentage of economically disadvantaged students had an average pass rate of 11 percentage points higher than the one-fourth of divisions with the most disadvantaged students. The difference in the average pass rate for divisions with high and low percentages of black students was nine percentage points. Although students with disabilities represents a relatively low proportion of the total student population overall, divisions with a lesser proportion of these students had pass rates exceeding divisions with the most disabled students by three percentage points.

SOL pass rates at the student level illustrate the compounding effect that economic status, race, and disability can have on student performance. Figure 5 shows that the range in average pass rates among students in these different groups was from a high of 94 percent to a low of 42 percent.

As indicated by these data, the extent of the challenges presented by high pass rate goals can vary between divisions depending on the mix of students that are educated by the schools. In the JLARC staff analysis, divisions were grouped into thirds based on the proportion of third grade students taking the SOL who were economically disadvantaged, black, or had a disability. Five of Virginia's 132 school divisions—Hopewell, Newport News, Norfolk, Prince

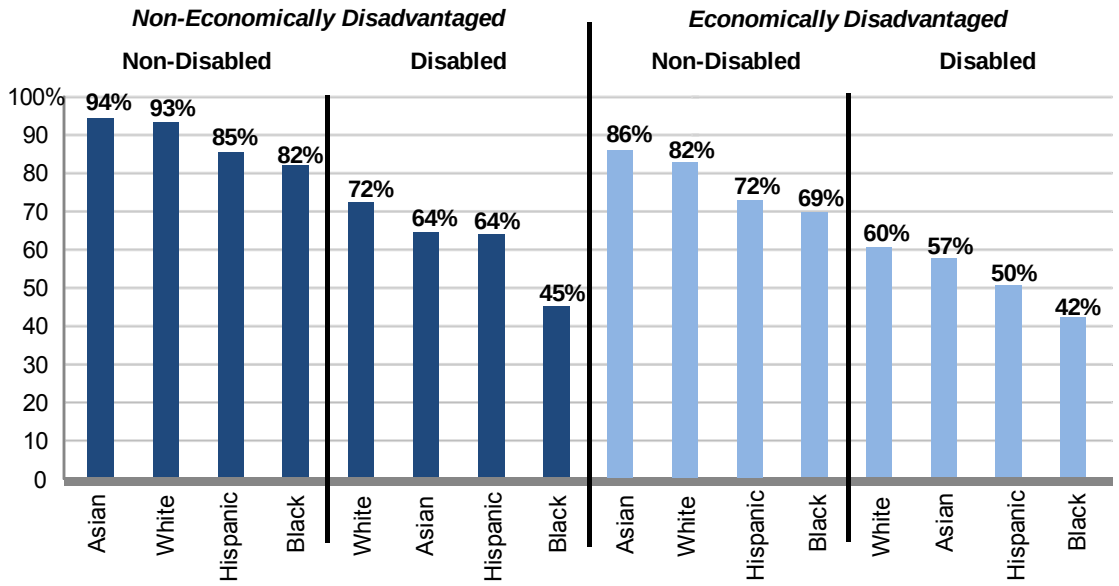
Figure 4: Divisions With a Higher Percentage of Economically Disadvantaged, Black, or Disabled Students Tend to Have Lower Pass Rates on Third Grade Reading SOL Test



Note: Pass rates shown are for the highest and lowest fourth of school divisions, which is based on the corresponding percentage of economically disadvantaged, disabled, or black students.

Source: JLARC staff analysis of 2010 third grade reading SOL test data provided by DOE (87,360 students).

Figure 5: Pass Rates Among Virginia's Third Grade Students Varied Considerably Relative to Their Economic Status, Disability Status, and Race

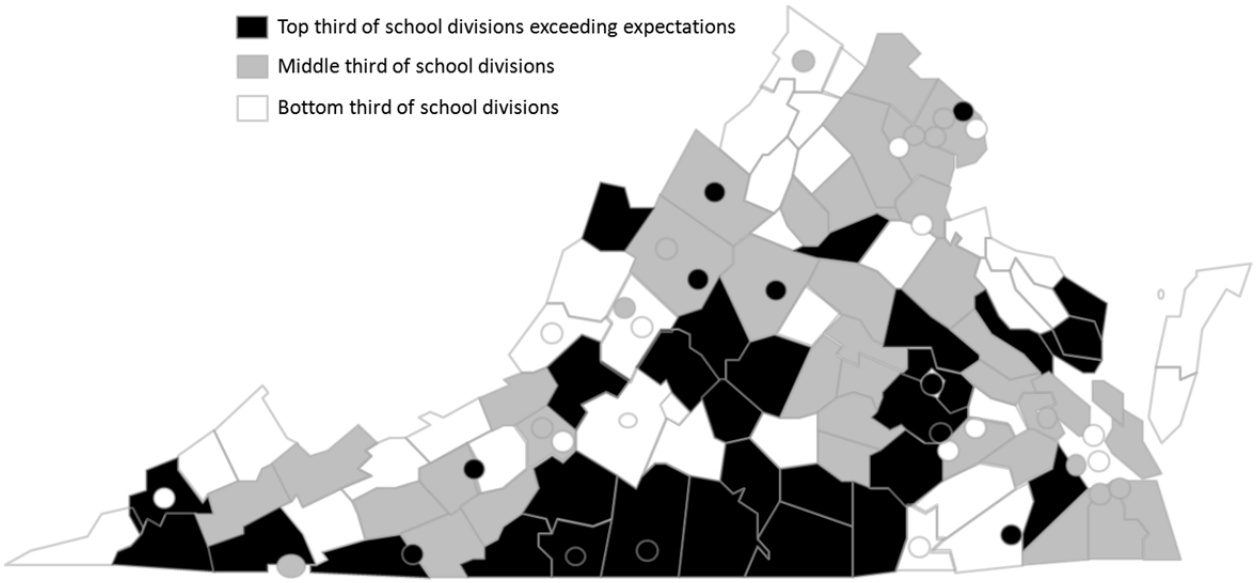


Source: JLARC staff analysis of 2010 third grade reading SOL test data provided by DOE (87,360 students).

Edward County, and Richmond City—were in the upper third for having the highest proportion in all three student categories. There were 37 divisions in the upper third for two of the categories, and 43 divisions were in the upper third for one of the categories. Forty-seven divisions in the State were not in the upper third for any of the three categories.

Figure 6 geographically illustrates division-wide performance of students on the 2010 third grade reading SOL test taking into account the factors which are most associated with differences in SOL reading pass rate results. The figure shows divisions most above and below their predicted pass rates. The top third of divisions exceeding expectations are somewhat spread across the state. However, third grade students in several Southside divisions and in a portion of the southwestern part of the State performed at higher levels than what might be expected relative to their socioeconomic factors. Some divisions in the northern part of the State had higher pass rates but did not exceed expectations relative to their student demographics.

Figure 6: Many Divisions Exceeding Predicted Performance on the 2010 Third Grade Reading SOL Test Were in Southside and Southwest Virginia



Source: JLARC staff analysis of 2010 third grade reading SOL test data provided by the Department of Education.

As noted, race was found to be a strong predictor of third grade reading test scores in the statistical analysis. While several factors may contribute to this result, one reason in particular seems to stand out. Research literature suggests that race variables may be serving as proxies at the student-level for the presence (or absence) of family structures which may be in a position to provide greater

or lesser parental support. U.S. census data for Virginia indicate major differences in family structure among different racial groups in a way that is largely consistent with differences in SOL reading test scores among third-graders.

According to 2005-2009 American Community Survey data, approximately 17.9 percent of white family households in Virginia and about 15.8 percent of Asian family households were single-parent households. In contrast, 46.0 percent, 32.0 percent, and 34.5 percent of black, Hispanic, and other racial groups' family households in Virginia were single-parent households. These data indicate that if a third-grader is black or Hispanic, the odds that he or she comes from a single-parent household are about two or three times higher than if the third-grader were a white student.

What does family structure have to do with third grade reading SOL test scores? Numerous studies have shown that children from single-parent families tend to do less well in school compared to children from two-parent families. For example, in one study, children from single-parent families reported that their parents had lower educational expectations for them, and were less likely to monitor their schoolwork, compared to children from two-parent households. Studies have shown that parents' time with children—which can be less available in single-parent households—and the use of this time are related to the educational achievement of school children.

The need for parental support in student achievement was also mentioned in JLARC staff interviews with principals and teachers for this study and for the 2004 JLARC study on school performance. In the 2004 study, principals indicated that single parents often work multiple jobs, which leaves them little time to provide needed support to their children. Teachers believed that this lack of parental support for academic achievement creates a major obstacle to student performance. When asked in a JLARC staff survey of teachers for the 2004 study to indicate the greatest challenges to student academic performance, the most frequently cited challenge was the lack of parental support for academic achievement.

According to the research literature, family structure can have a direct bearing on a family's economic condition. Parents in single-parent households generally have to work, but their household income is generally less than that of two-parent households. In this way, there is a strong link between the household's economic condition and family structure, and by extension, to race. In other words, family structure differences are a major determinant of family income, which may explain, at least in part, why race is related to a family's economic condition.

LARGER DIVISIONS VIEW THE 95 PERCENT PASS RATE GOAL AS PROBLEMATIC MORE OFTEN THAN SMALLER DIVISIONS

In an ideal situation, all third grade students would be able to read with a level of skill that constitutes success for their age and grade. Very high student success rates on reading tests (100 percent, as under NCLB, or 95 percent as per the Board of Education and DOE) can serve as high-aspiration goals or statements of an ultimately desirable outcome. However, some practical concerns result if aspirational goals are applied as accountability goals.

One concern is that there can be tradeoffs between how high a level of reading skill is expected of the students and the percentage of students who are in a position to succeed. When tests are given which present a real challenge for students of average and above-average skill, it is probably unrealistic to expect below-average students to perform so well that a 95 percent or 100 percent pass rate can be achieved. On the other hand, tests for which success is within the reach of below-average students may not be very challenging for many above-average students. These tests may be subject to charges from critics that they are too easy, with high pass rates pointed to as evidence for the case. Criticisms may be neglectful of the fact that successful performance by all students was seen as the desired outcome in the first place.

A second concern is the role of socioeconomic factors, discussed in the preceding section. To achieve a 95 percent pass rate, or any single pass rate objective, the extent to which school divisions or schools are under pressure and must find means to raise student achievement varies greatly. For example, based on just achieving the "typical" level of success with students that occurs statewide, there are divisions predicted by the JLARC staff models to have a pass rate between about 86 and 91 percent, and others predicted to have a pass rate below 72 percent. A division-wide pass rate in between the predicted levels for the two groups – for example, about 80 percent – may signify underachievement by the one group but a rather good result for the other.

A third concern is that if goals are put forward that are seen as practically unachievable, and if these goals are insisted upon, a situation is present that can foster cheating. Recently, cheating on high-stakes achievement tests was uncovered in some Georgia schools. Georgia's Office of Special Investigations found that there were three primary conditions leading to widespread cheating, stating in the report that

- The targets set by the district were often unrealistic, especially given their cumulative effect over the years. Addition-

ally, the administration put unreasonable pressure on teachers and principals to achieve targets.

- A culture of fear, intimidation and retaliation spread throughout the district; and
- [The Division Superintendent] and her administration emphasized test results and public praise to the exclusion of integrity and ethics.

The findings from Georgia highlight the importance for states and school divisions of approaching testing from a standpoint which establishes goals that are realistic, emphasizes the integrity of the results, and utilizes the information from the tests constructively to help divisions, schools, and teachers improve instructional quality.

DOE staff note that the 95 percent pass rate goal is an aspirational goal. The ambitious nature of this goal for the reading SOL test can be seen in the fact that for 2010, even among divisions with socioeconomic factors most conducive to high pass rates, only two small divisions were predicted to have pass rates over 90 percent. (Falls Church and Lexington both had predicted pass rates of about 91 percent).

As part of the school division survey for this study, JLARC staff asked divisions for their perspective on the feasibility of their division achieving a 95 percent pass rate for the third grade reading SOL test. Divisions that did not see a 95 percent rate as feasible were asked to indicate the reasons why a 95 percent rate is not feasible. They were also asked to indicate what they consider a reasonable pass rate to aspire to.

A majority of third grade students taking the reading SOL in 2010 were in divisions that question the feasibility of a 95 percent pass rate for division-wide achievement.

The majority of responding divisions (72 of 113) indicated that a 95 percent pass rate was feasible for them to achieve. However, there was a clear difference between larger divisions (1,000 or more third grade students taking the SOL) and smaller school divisions (see Table 15). Whereas 66 of 96 smaller divisions (69 percent) saw 95 percent as a feasible pass rate, only 6 of 17 larger divisions (35 percent) saw it as feasible. With the larger divisions serving more third grade students, a majority of third grade students taking the reading SOL in 2010 (58 percent) were in divisions that question the feasibility of a 95 percent pass rate for division-wide achievement.

Table 15: Larger School Divisions More Frequently Thought 95 Percent Threshold Is Probably Not Feasible for Their Division

	95 Percent Goal Is Feasible			95 Percent Goal Probably Not Feasible		
	Responding Divisions	Number of Students[a]	Percent of Students	Responding Divisions	Number of Students[a]	Percent of Students
Smaller	66	21,685	25.5%	30	8,337	10.1%
Larger	6	13,117	15.8	11	39,703	47.9
Total	72	34,802	41.3	41	48,040	58.0

[a] The total number of students is 82,842, which is based on the number of third grade students with reported SOL reading test scores in 2010 among school divisions responding to the survey.

Source: JLARC staff analysis of 2011 survey of school divisions and number of students taking the third grade SOL reading test in 2010.

Among the 41 school division respondents indicating that a 95 percent pass rate is probably not feasible for their division:

- A 92 percent goal was identified as reasonable by two divisions,
- a 90 percent goal was identified by 18 divisions, making it the most frequently cited alternative goal,
- a goal between 86 and 89 percent was identified by six divisions,
- a goal between 80 and 85 percent was identified by 14 divisions, and
- the statistical mean for the alternative percentage goals provided by the 41 divisions was 87.5 percent.

INTERGRADE COOPERATION, TEACHER QUALITY, AND STUDENT VIEWS OF READING MAY IMPACT PASS RATES

In addition to examining school division SOL pass rates, there was also interest for this study in obtaining school division perspectives on the strengths and weaknesses of their reading programs. As part of the school division survey for this study, JLARC staff asked respondents to indicate the extent of their satisfaction with the current state of their division's kindergarten to grade three reading program in 12 areas. Three ratings for each area were available to the divisions: a rating of one for "not satisfied, needs much improvement," a rating of two for "somewhat satisfied, needs some improvement," and a rating of three for "very satisfied". The results were aggregated and mean scores ranging from one to three were calculated for each area. Table 16 shows the mean satisfaction scores for three groups of divisions:

- all responding school divisions,

- divisions with a currently favorable pass rate outlook—their actual pass rate in 2010 was above their predicted pass rate, and they think that a 95 percent pass rate is feasible to achieve, and
- divisions with a currently less favorable pass rate outlook—the pass rate they achieved in 2010 was below their predicted pass rate and they do not think that a 95 percent pass rate is feasible to achieve.

Table 16: Mean School Division Satisfaction Ratings for 12 Aspects of Their Reading Program for Kindergarten Through Third Grade

Reading Program Aspect *1 = Not Satisfied* *2 = Somewhat Satisfied* *3 = Very Satisfied*	All Responding Divisions (n=115)	Above Predicted Pass Rate & 95% Goal Seen as Feasible (n=35)	Below Predicted Pass Rate & 95% Goal Not Seen as Feasible (n=19)	Difference in Satisfaction Ratings
Division's ability to attract and retain quality teachers	2.40	2.54	2.16	0.38
Availability of diverse and engaging reading material	2.33	2.31	2.16	0.16
Extent to which students understand that reading skills are important	2.33	2.51	2.05	0.46
Extent to which students are discovering reading is fun	2.29	2.34	2.16	0.18
Extent to which students find reading block time to be engaging and enjoyable	2.24	2.31	2.16	0.16
Extent to which the students are progressing in reading	2.09	2.20	1.84	0.36
Extent of training and understanding of best practices	2.04	2.14	2.11	0.04
Extent of coordination, collaboration, and communication across grades	2.04	2.17	1.84	0.33
Needs of English Language Learner students are met	1.99	2.06	1.95	0.11
Effectiveness of all teachers in teaching comprehension	1.97	2.00	1.95	0.05
Literacy activities adequately linked to content areas	1.89	2.00	1.89	0.11
Extent to which needs of students with disabilities are met	1.86	1.91	1.74	0.18

Note: Aggregate results for all 115 responding divisions are shown above. Two subgroups of divisions of particular interest are shown separately in the table and account for 54 of the divisions that responded to the JLARC staff survey. Additional divisions not shown separately in the table were above their predicted pass rate but did not see 95 percent as feasible, or were below their predicted pass rate but still saw a 95 percent pass rate as feasible.

Source: JLARC staff analysis of school division survey results, spring 2011.

A final column in the table shows the difference in the average satisfaction rating for divisions with favorable and less favorable pass rate outlooks.

As can be seen in the table, all mean satisfaction ratings are closer to somewhat satisfied (2.0) than to very satisfied (3.0), indicating that divisions typically see some room for improvement in their reading programs. The mean satisfaction rating across divisions for the extent to which students are progressing is a 2.09. Included among the areas with least satisfaction (mean satisfaction rating is below 2.0) are the extent to which the needs are met for English Language Learners and students with disabilities, the effectiveness of all teachers in teaching reading comprehension, and the linkage between literacy activities and content areas.

There are interesting differences in satisfaction levels between the two sub-groups that are defined based on pass rate outlook. The difference in satisfaction with the extent to which students are progressing is among the larger differences, at 0.36. The largest difference in the mean satisfaction rating between the two groups is 0.46, for the extent to which students understand that reading skills are important. Two other areas of substantial difference in mean satisfaction ratings for divisions with differing pass rate outlooks were for the division's ability to attract and retain quality teachers (0.38) and the extent of intergrade cooperation (0.33).

While there is a substantial difference in the mean satisfaction ratings for teacher quality, there is not much difference in the mean satisfaction ratings for the extent of training and understanding of best practices for teaching reading. This is because average satisfaction ratings for the extent of training and understanding of best practices were consistently at a relatively low level among the 12 items—across all responding divisions, as well as in both division sub-groups identified in the table. The following two chapters of this report examine in more detail effective classroom reading strategies and best practices, as well as the importance of providing training and support for teachers.

Chapter 4

Key Strategies and Practices for the Classroom Reading Program

In Summary

Because literacy is the basis for all content learning, the success of the classroom reading program is critical. All classroom reading programs should cover six key components—phonemic awareness, phonics, fluency, vocabulary, text comprehension, and writing. Research shows that certain practices can lead to greater success in teaching students these key components, including (1) requiring that a daily reading block be at least 90 to 120 minutes and include writing; (2) including small-group differentiated instruction as part of the reading block; (3) using data to guide instruction and group students by reading ability; and (4) providing high-quality, engaging reading material at different reading levels. The vast majority of Virginia's school divisions report that their classroom reading programs use these practices, although including writing and using technology as part of the reading block are two areas in which lower-performing divisions lag behind their higher-performing peers. Additional school division practices which help provide favorable conditions for early grade reading success include access to preschool and proactive support, coordination, and guidance from the division to the schools.

Having adequate literacy skills is required for all content area learning. To be academically successful, a child must be able to read and write proficiently at required levels. Key practices have been identified by research in early reading, reading experts, and educators for maximizing the effectiveness of classroom reading programs in teaching literacy skills to young children. JLARC staff reviewed the research literature, interviewed early literacy experts and school- and division-level staff, surveyed school divisions, and observed classrooms to gain insight on these key practices and strategies.

Throughout this chapter, distinctions are frequently noted between higher performing divisions and lower performing divisions. Performance is based on the results of the 2010 third grade reading SOL tests. However, it is important to note that performance is not assessed on divisions' actual pass rates but rather on how divisions performed relative to their predicted performance. As described in Chapter 3, there are strong socioeconomic factors that are highly related to reading performance and are outside of school divisions' control. Therefore, the instructional program is better assessed by how student performance compares to what would be expected in light of socioeconomic factors than it is by the raw pass rate.

A CLASSROOM READING PROGRAM SHOULD COVER SIX KEY COMPONENTS

National Reading Panel

The National Reading Panel was created as a result of a Congressional request in 1997 for the Director of the National Institute of Child Health and Human Development, in consultation with the Secretary of Education, to convene a national panel to assess the status of research-based knowledge, including the effectiveness of various approaches to teaching children to read.

Early literacy experts and the early reading research indicate that a number of key components should be a part of every early reading program. These components are: phonemic awareness, phonics, fluency, vocabulary, text comprehension, and writing (Exhibit 1). The first five skills were identified as essential for learning to read in the 2000 report by the National Reading Panel, *Teaching Children to Read*. The sixth component—writing—has also been identified by many early literacy experts as being critical to the process of learning to read, and they indicate that it should be part of the classroom reading program.

Each of the key components of a reading program is described below with a summary of best practices for teaching these skills. A wealth of readily available literature exists (some of which is referenced in Appendix F) that provides more detail on how to teach each of the key components. This section, therefore, provides a general description of some of the strategies and best practices for teaching the key skills to young students. In general, the literature indicates that teachers should allow ample time for teacher modeling and application of strategies for learning key skills long before independent student application of the strategies should be expected.

Exhibit 1: Key Components a Reading Program Should Cover

- **Phonemic Awareness** – the ability to notice, think about, and work with the individual sounds in spoken words. Before children learn to read print, they need to become aware of how the sounds in spoken words work. They must understand that words are made up of speech sounds, or phonemes. This helps children learn to spell.
- **Phonics** – helps children learn the relationships between the letters of written language and the sounds of spoken language. For most students, this begins in kindergarten or first grade and lasts for two years.
- **Fluency** – the ability to read text accurately. More fluent readers focus their attention on making connections among the ideas in a text. Therefore, they are able to focus on comprehension. Less fluent readers must focus their attention primarily on decoding individual words. Therefore, they have little attention left for comprehending the text.
- **Vocabulary** – the words needed to communicate effectively. Oral vocabulary refers to words used in speaking or recognized when listening. Reading vocabulary refers to words recognized or used in print. Vocabulary is important because readers must know what most of the words mean before they can understand what they are reading.
- **Text Comprehension** – the reason for reading. Text comprehension is purposeful and active. Text comprehension strategies can be taught through explicit instruction, through cooperative learning, or by helping readers use strategies flexibly and in combination.
- **Writing** – the ability to express ideas with written words. Experts agree that reading and writing are interlinked and that writing should be included as part of the classroom reading program.

Source: Anderson, B., Lehr, F., and Osborn, J. *Put Reading First: The Research Building Blocks for Teaching Children to Read.* Washington, D.C.: The Partnership for Reading, 2001. Early reading experts interviewed by JLARC staff.

Phonemic Awareness

Phonemes are the smallest units of sound that compose spoken language. Phonemic awareness is the ability to notice, think about, and work with the individual sounds in spoken words. For example, changing the first phoneme in the word *hat* from 'h' to 'm' changes the word from *hat* to *mat*. Before children can learn to read, they must become aware of how the sounds in words work.

Phonemic awareness is not phonics. Phonics instruction (discussed below) entails teaching students how to use letter-sound relationships to read or spell words whereas phonemic awareness is the understanding that the sounds of *spoken* language work together to make words.

Phonemic awareness is typically taught in preschool through first grade but is important because, according to the National Reading Panel, research has identified phonemic awareness and letter knowledge as the two best school-entry predictors of how well children will learn to read during the first two years of instruction.

The research shows that phonemic instruction is most effective when children are taught to manipulate phonemes by using letters of the alphabet and when instruction focuses on only one or two types of phoneme manipulations at a time. Specific strategies for teaching phonemic awareness are listed in Table 17.

Table 17: Examples of Strategies for Teaching Phonemic Awareness

Strategy	Description
Sound Sorting	Using pictures, students pronounce the words, isolate the sounds in the words, and categorize the words
Blending phonemes	Students listen to separately spoken phonemes and then combine them to form a word
Segmenting phonemes	Students break a word into separate sounds
Isolating phonemes	Students recognize individual sounds in a word
Identifying phonemes	Students recognize the same sounds in different words
Say-It-And-Move-It	Students move objects into a box as they say a sound
Manipulating phonemes	Students add, delete, or substitute phonemes in words

Source: Ellery, V. *Creating Strategic Readers*, 2009. National Institute for Literacy, *Put Reading First*, 2001. Walpole, S. and McKenna, MC. *Differentiated Reading Instruction: Strategies for the Primary Grades*, 2007.

Phonics

Phonics instruction teaches children the relationships between the letters of written language and the phonemes (individual sounds) of spoken language. The primary focus of phonics is to help beginning readers understand how letters are linked to sounds to form letter-sound correspondences and spelling patterns and to help them learn how to apply this knowledge in their reading.

Phonics instruction may be provided either systematically (in which a sequential set of phonics elements is explicitly taught) or incidentally (in which the teacher does not follow a planned sequence of phonics elements but rather highlights elements as they appear in text). The National Reading Panel found that systematic and explicit phonics instruction is more effective than non-systematic or no phonics instruction. The panel also found that the effects of systematic phonics instruction were substantial in kindergarten and the first grade, indicating that systematic phonics should be implemented at those grade levels. Although explicit, systematic phonics instruction is a valuable and essential part of a successful classroom reading program, phonics should not comprise the entire reading program for beginning readers. Specific strategies for teaching phonics are listed on Table 18.

Table 18: Examples of Strategies for Teaching Phonics

Strategy	Description
Synthesizing	Students convert letters into sounds and then combine these sounds to create a word
Sounding and Blending	Students recognize an unknown word by producing individual letter sounds and then combining them
Analyzing	Students read a whole word and then "take it apart" to investigate how the word works
Contextualizing	Students use letter-sound correspondences and integrate this association with context clues to form a word
Patterning	Students recognize parts of the unknown word and compare these with a similar pattern from a known word
Spelling	Students transform sounds into letters and letters into written word form. Reading and spelling are interdependent.
Recognizing	Students recognize letters, sight words, and high-frequency words
Decoding By Analogy	Students learn a body of words representing high-frequency spelling patterns and use those words to unlock sound and spellings of unknown words

Source: Ellery, V. *Creating Strategic Readers*, 2009. National Institute for Literacy, *Put Reading First*. Walpole, S. and McKenna, MC. *Differentiated Reading Instruction: Strategies for the Primary Grades*, 2007.

Fluency

Fluency is the ability to read text accurately and quickly. Fluent readers are able to read orally with speed, accuracy, and proper expression. Reading fluency is one of several critical factors necessary for comprehension because more fluent readers are able to focus their attention on making connections among the ideas in the text, and between the text and their background knowledge. In contrast, less fluent readers must focus their attention on decoding individual words and, therefore, begin to lose the meaning of what they are reading.

Fluency develops gradually over considerable time and through substantial practice. Two instructional approaches—guided oral reading and independent silent reading—have typically been used to teach reading fluency. The National Reading Panel found that

research supports repeated and monitored oral reading for improving reading fluency. However, evidence is not currently available to confirm that instructional time spent on independent, silent reading improves fluency. The panel indicated that this does not mean that independent reading does not have a positive impact upon fluency. Rather, the effectiveness of silent reading is yet unproven and should not be used as the only type of instruction to improve fluency. Strategies to improve reading fluency are listed in Table 19.

Table 19: Examples of Strategies to Improve Reading Fluency

Strategy	Description
Phrasing	Students learn to "chunk" text into syntactically meaningful phrases using clues such as grammar and punctuation
Assisted reading	Teachers model fluent reading and provide guidance and scaffolding when students read text
Rereading	Students repeat reading text passages to increase their word recognition, reading speed, and oral expression
Choral reading	Students read together as a group
Expressing	Students infuse expression into reading using texts such as scripts, speeches, poetry, journal entries, and song lyrics
Pacing	Students are encouraged to think about the rate at which they read and determine which pace is most appropriate
Wide reading	Students are exposed to a range of texts through tools such as book baskets and are coached in how to select the correct book for themselves
Fluency development lesson	Teachers first model expressive reading of an entire passage, then students read the passage orally in pairs, and lastly the teacher assesses each student while the students read in pairs
Fluency-oriented reading instruction	Five day cycle in which (1) teachers read the selection, (2) students engage in echo reading and practice the selection at home, (3) students read chorally and practice at home, (4) students partner read and practice at home, and (5) students do extension activities and have their fluency assessed

Source: Ellery, V. *Creating Strategic Readers*, 2009. National Institute for Literacy, *Put Reading First*. Walpole, S. and McKenna, MC. *Differentiated Reading Instruction: Strategies for the Primary Grades*, 2007.

Vocabulary

Vocabulary refers to the words we must know to communicate effectively, and it is a critically important component to learning to read. There are two types of vocabulary – oral vocabulary and print vocabulary. A reader who encounters an unknown word in print can decode the word to speech. If the word is in the reader's oral vocabulary, the reader will understand it. If the word is not in the reader's oral vocabulary, the reader will have to try to determine the meaning by other methods, if possible. Consequently, the larger the reader's vocabulary (either oral or print), the easier it is easier for the reader to understand the text.

According to Walpole and McKenna in *Differentiated Reading Instruction*, the goal of increasing word knowledge is undisputed, and perhaps one of the most important reasons why teachers need to pay attention to vocabulary is that vocabulary knowledge has a

spiraling effect. The more words a person knows, the easier it is to learn yet more words. Due to the importance of vocabulary for both fluency and reading comprehension, vocabulary instruction should be an integral component of the classroom reading program. The research shows that vocabulary should be taught both directly and indirectly, and multiple exposures to vocabulary items are important. Strategies for effective vocabulary instruction are listed in Table 20.

Table 20: Examples of Strategies for Effective Vocabulary Instruction

Strategy	Description
Direct vocabulary instruction	Students are taught key or important vocabulary words before reading a text
Associating	Students use alternative words to construct meaning from the text and link prior experiences with new information
Contextualizing	Students use the context that surrounds an unknown word to discover its meaning
Categorizing	Students organize new concepts and experiences in relation to prior knowledge about the concept
Visual Imaging	Students create a visual image that represents the definition of the word
Analyzing	Students analyze the structure of words or word parts to determine their meaning
Word awareness	Students consciously transfer new vocabulary words into their writing and speaking
Semantic Feature Analysis	Students list words of the same category together with their features, for example, types of insects.
Wide reading	Students are presented a variety of opportunities to read, rehearse, and talk about words and concepts in the book
Referencing	Students reference resources, such as a dictionary, to search for word meaning

Source: Ellery, V. *Creating Strategic Readers*, 2009. National Institute for Literacy, *Put Reading First*. Walpole, S. and McKenna, MC. *Differentiated Reading Instruction: Strategies for the Primary Grades*, 2007.

Text Comprehension

According to the National Institute for Literacy, "Comprehension is the reason for reading. If readers can read the words but do not understand what they are reading, they are not really reading."

Readers derive meaning from text when they engage in intentional, problem solving thinking processes. Good readers have both a purpose for reading and think actively while they read. They use their experiences and knowledge of the world, their knowledge of vocabulary and language structure, and their knowledge of reading strategies to make sense of the text and to get the most out of it. They are also able to recognize when they have problems with understanding text and how to resolve these problems as they read.

Research shows that students can be taught to use specific strategies to improve their comprehension. According to the National Reading Panel, explicit and formal instruction in the application of comprehension strategies has been shown to be highly effective in

enhancing understanding. Thus, teachers should weave comprehension strategies into their everyday curriculum starting as early as kindergarten. In addition, using multiple comprehension strategies together is effective. Examples of strategies for improving comprehension are listed in Table 21. In contrast to the strategies for the previous four skills listed above, the strategies in Table 21 not only can be used to help teach reading comprehension, but are strategies that students should be taught to incorporate into their everyday reading habits to improve their comprehension.

Table 21: Examples of Strategies for Improving Reading Comprehension

Strategy	Description
Monitoring comprehension	Students learn to identify when they have problems understanding what they read and how to resolve those problems
Using graphic and semantic organizers	Students use organizers to illustrate concepts and interrelationships among concepts in text
Answering questions	Teachers use questions to guide and monitor students learning
Previewing	Students begin relating what they already know and form opinion about the text
Activating and building background knowledge	Students connect new information to their own knowledge and experiences, and if students have little or no background knowledge, teachers build this knowledge
Predicting	Students predict what will happen based on items such as background knowledge, the title, illustrations, and details within the text
Generating questions	Students generate and ask question to identify ideas, construct meaning, and enhance understanding
Visualizing and sensory imaging	Students visualize by creating a picture in their minds based on descriptive details within the text
Inferring and drawing conclusions	Students merge their background knowledge with text clues to come to a conclusion about an underlying theme
Summarizing and retelling	Students identify and organize the essential information found within a text either orally or in writing
Determining importance	Students distinguish between what is important and what is merely interesting
Synthesizing	Students merge new information with prior background knowledge to create an original idea
Recognizing story structure	Students identify categories of content (such as setting and outcomes) and how content is organized into a plot
Recognizing text structure	Students recognize different structures for non-fiction, expository text such as compare-contrast, description, chronological sequence, explanation, definition and example, and problem-solution

Source: Ellery, V. *Creating Strategic Readers*, 2009. National Institute for Literacy, *Put Reading First*. Institute of Education Sciences, *Improving Reading Comprehension in Kindergarten Through 3rd Grade*, 2010. Walpole, S. and McKenna, MC. *Differentiated Reading Instruction: Strategies for the Primary Grades,* 2007.

Writing

The connections between reading and writing long have been understood, and research has shown that effective elementary literacy instruction produces strong student writing. According to Michael Pressley in *Reading Instruction That Works: The Case for Balanced Teaching,* writing promotes reading development early on and is an important variable in predicting children's overall reading performance. Research by Walpole, Justice, and Invernizzi on the components of the 'literacy diet' for classroom instruction

shows that writing and grammar should make up as much as 20 percent of literacy instruction as early as kindergarten and first grade.

Many of the strategies that apply to learning the five key reading skills above, such as activating background knowledge, spelling, and use of graphic organizers, also apply to teaching writing. However, there are also some strategies that are particularly helpful and unique in improving the writing skills of young students. Examples of some of these strategies are included in Table 22.

Table 22: Examples of Strategies for Teaching Writing

Strategy	Description
Experience with multiple genres	Students are given opportunities to write in both narrative and non-narrative genres, including poems, letters, reports, and descriptions
Choosing a topic	Students are coached on how to choose a topic to write about
Spelling strategies	Students are taught strategies, such as using a word wall or stretching out words, so that lack of spelling knowledge does not inhibit writing about desired topics
Sharing writing	Students tell or read what they have written to other members of the class
Adding on	Students learn how to work on the same writing piece over several days
Editing	Students gradually learn how to look for errors in their writing, including how to peer-edit with partners
Publishing	Students finalize a written piece by taking steps such as editing, conferencing with the teacher on the piece, making corrections, and providing illustrations.
Revising	Students learn the strategies of adding, replacing, removing, and reordering to make an existing piece better

Source: Pressley, M. *Reading instruction That Works: The Case for Balanced Teaching*, 2006. Cunningham, PM and Allington, RL. *Classrooms That Work: They Can All Read and Write*, 2011.

KEY ASPECTS OF AN EFFECTIVE CLASSROOM READING BLOCK

The reading block is the portion of time during the school day that is devoted to literacy activities. The key components of a classroom reading program, described previously, should be covered during this time. Many experts indicate that literacy skills should also be woven throughout all content areas during the day. However, the reading block is specifically dedicated to literacy-related instruction.

Division Performance

For Chapters 4 and 5, *higher performing divisions* are defined as those divisions most exceeding their predicted pass rates on the 2010 third grade reading SOL test.

Lower performing divisions are defined as those divisions most underperforming their predicted pass rate on the 2010 third grade reading SOL test.

There are core reading curricula, such as textbooks, that have specifically been developed for reading instruction. While some curricula are more popular than others, many high-performing school divisions indicate that there is no particular reading program or curricula that will guarantee success. In fact, many teachers supplement their reading curricula with other materials. Rather, the structure of the reading block and, as will be discussed in Chapter 5, the effectiveness of classroom teachers are the factors that are most associated with a successful reading program.

Reading Block Should Be At Least 90 to 120 Minutes Daily and Should Include Writing

Reading experts and the research on early literacy indicate that the reading block should occur daily in kindergarten through third grade. Most experts also concur that it should be at least 90 minutes daily, although some experts indicate that it should be as long as 120 minutes to allow teachers adequate time to cover all aspects of reading and language arts. In *Schools That Work*, Allington and Cunningham suggest that the reading block should last from between 120 to 150 minutes daily in kindergarten through grade six. However, the range most frequently cited by experts is 90 to 120 minutes. In addition, as mentioned in the discussion of the key components of a reading program, research indicates that the reading block should include both reading and writing activities. Experts further recommend that it should occur as one, uninterrupted block of time to maximize the learning experience for students.

The majority of Virginia school divisions appear to adhere to the research in terms of the frequency and length of their reading block.

Based on a survey of Virginia's school divisions regarding their third grade reading programs, the vast majority of divisions adhere to the research on the frequency and length of their reading block. Over 96 percent of divisions indicated that they require or suggest that the reading block be scheduled daily, and the average length of time required or suggested by divisions for the reading block is 104 minutes, which is well within the range suggested in the research.

However, several Virginia school divisions did not appear to structure their reading blocks in accordance with the practices advocated by experts. Five school divisions reported requiring or suggesting reading blocks of only 60 minutes in length. During classroom observations, JLARC staff also observed instances in which the reading block was broken up throughout the school day, and where two groups of students rotated in and out of the classroom during the reading block. In the latter case, even though the school division may have reported a 120-minute reading block, the students would have only experienced a 60-minute block. In one classroom visited, the class schedule posted in the classroom showed that guided reading and language arts instruction was to occur between 8:45 and 10:45, with each taking one hour. However, by the time that all students had returned from breakfast, and an attendance count and bathroom break were taken, guided reading and center time did not begin until 9:30. Guided reading then lasted for 35 minutes rather than an hour. The language arts session began 20 minutes late.

These practices were the exceptions, and they were not disproportionately found in either high- or low-performing divisions. This is

not to diminish the recommendations in the research for the length and structure of the reading block. However, it does suggest that the amount of reading block time that is intended for classrooms does not determine the quality of a reading program.

The inclusion of writing in the reading block is an area in which differing practices among Virginia school divisions does appear to relate to student performance. On average, 85 percent of all divisions reported including writing as part of the reading block. However, while 95 percent of the top third highest performing divisions (in terms of actual SOL pass rates compared to their predicted pass rates) require or suggest that the reading block include writing throughout the regular school year, only 72 percent of the bottom third of divisions require or suggest this practice. Further, top performing divisions require or suggest that writing be included more frequently (four to five days a week) than lower performing divisions.

Reading Block Should Include Both Whole-Group and Small-Group, Differentiated Instruction

Early reading research indicates that the reading block in kindergarten through third grade should include both whole-group reading instruction and small-group differentiated instruction. This is because children within the same grade read at different levels. As discussed in Chapter 2, while a proportion of children read at grade level, some read above grade level, and some read below grade level. To most effectively address the differing needs of individual students in the classroom, whole-group instruction should be supplemented with differentiated, small-group instruction that meets students' particular needs and reading abilities. Figure 7 includes photographs of a third grade teacher instructing students in both whole-group and small-group settings.

According to Walpole and McKenna in *Differentiated Reading Instruction: Strategies for the Primary Grades,* whole-group reading instruction means instruction in which all children in the classroom participate in the same set of activities. Whole-group instruction may include direct instruction from the teacher, group work, individual practice, and reading-related assessments. Whole-group instruction is the basic foundation of the reading curriculum and instruction in the classroom.

With small-group differentiated instruction, Walpole and McKenna indicate that children work in small groups formed by the teacher. These groups are based on each student's reading level which is determined through assessment. During small-group time, one group of students works directly with the teacher while the other students are engaged in meaningful literacy practice—

Figure 7: Whole-Group and Small-Group Reading Instruction in a Third Grade Classroom

Source: JLARC staff photographs.

often working in pairs or independently. Some teachers use literacy work stations as an effective means of providing differentiated, independent literacy activities while the teacher works with small groups. Ideally, both small-group work and the independent work during this time are based on the literacy levels of students.

During small-group time, different groups may meet sequentially with the teacher. The teacher may also alternate between whole-group and small-group instruction throughout the reading block, meeting with different groups each time the class alternates back to small group. If another aide or teacher is available, more than one small group may meet simultaneously.

Differentiated reading instruction is considered to be critically important to helping all students maximize their learning, and research findings indicate that students achieve more growth when instruction is matched with their needs. For example, Walpole and McKenna reference research conducted in 2004 which found that third graders who began the year with average or below-average reading comprehension showed more progress in classrooms where teachers provided more time in teacher-managed, explicit comprehension instruction (such as discussion, reading comprehension strategy instruction, and vocabulary instruction) and less time in child- managed instruction (such as completing an individual reading comprehension activity). Conversely, students who began third grade with strong comprehension test scores experienced stronger growth with more time in child-managed comprehension activities, including peer activities. This and other related research in early reading highlight the fact that providing children with what they need maximizes their growth more than "one-size-fits-all" instruction.

In Virginia, small-group differentiated reading instruction appears to be widely encouraged by school divisions although it may not occur as frequently in practice. On the JLARC staff survey, 96 percent of divisions reported that they suggest or require that small-group differentiated instruction be included as part of the third-grade reading block. Of those, 76 percent indicated that they recommend or require that it always be included in the reading block and that all groups meet daily, which is supported by the research. However, visits to school divisions by JLARC staff showed that the practice of specific teachers may differ from the recommendation of the division. For example, in several divisions that reported suggesting or requiring small-group differentiated instruction, teachers indicated that they did not implement this practice. This occurred in both high- and low-performing divisions. In the instances observed by JLARC staff, teachers indicated that they would like to implement small-group differentiated instruction but felt that they needed more training in how to do so effectively.

Some teachers indicated that they would like to implement small-group, differentiated instruction but felt that they needed more training in how to do so effectively.

Reading Instruction Should Be Informed by Data

The ability to group students and provide differentiated instruction depends on having the knowledge of where different students are in their reading ability. Data from reading assessments can

provide this knowledge. According to Ellery in *Creating Strategic Readers,* "Assessment results reveal the students' current knowledge base and their need for future growth."

Guidance provided from DOE indicates that assessments should measure progress in the essential components of reading instruction (described earlier) and identify students who may be at risk for reading failure or who are already experiencing reading difficulty. According to DOE and consistent with the early reading research, a reading program should also include three types of reading assessments:

- Screening assessments—indicate which students may have difficulties in reading and may need additional support or intervention, and are administered at the beginning of the school year to all students.
- Diagnostic assessments—provide in-depth specific information concerning students' skills, knowledge, and application of reading concepts.
- Progress monitoring assessments—measure student progress at intervals throughout the school year to determine the effectiveness of instruction and to ensure students are not falling behind.

Continuous progress monitoring is particularly important in the context of small-group, differentiated instruction. Progress monitoring can include both formal assessments and informal evaluations developed by the classroom teacher. The key is to ensure that groupings are flexible and that students can be regrouped throughout the year based on their needs, progress, and response to instruction according to assessment. Research shows that successful teachers allow students to move among reading levels throughout the year based on their progress. Ongoing data analysis is also essential to ensure that children are identified for needed intervention as early as possible.

Most of Virginia's school divisions conduct assessments of reading progress throughout the year, and they appear to generally recognize the value of assessment data. Ninety-three percent of school divisions responding to the JLARC staff survey indicated that they conduct reading assessments of third grade students to monitor progress throughout the year (in addition to assessments administered at the beginning of the year and the third grade reading SOL at the end of the year). For those divisions that experienced an increase in their third grade SOL scores between 2009 and 2010, one of the top reasons given was the use of or increased use of assessment data. The case study below illustrates one Virginia school division that has made extensive use of student assessment data and

has been particularly successful in achieving a high level of student performance on the third grade reading SOL test.

> ***Case Study: Extensive Use of Student Assessment Data***
> *One division in rural Virginia that exceeded its predicted pass rate in 2010 makes extensive use of both formal benchmark assessments and informal student data to continuously assess how students are progressing in reading. At one of the schools, the reading specialist indicated that she reviews all ongoing reading assessments, including daily classroom work, to determine how students are doing. As soon as a student shows any problems, the student is immediately given intervention in that area. Students move in and out of intervention very fluidly depending on their progress and what their most recent data shows.*

Although the majority of Virginia's school divisions conduct assessments of reading progress, their frequency and approach vary. Approximately 53 percent of divisions responding to the JLARC staff survey indicated that they conduct assessments to monitor progress on a quarterly basis. However, some indicated that they assess weekly or monthly, or at other intervals. The assessment instruments used by divisions at the third grade level also vary widely. Based on site visits and responses to the survey of school divisions, some divisions rely heavily on PALS throughout third grade for reading assessment, whereas others have purchased alternative reading assessment packages or developed their own assessments. Eight school divisions responding to the survey indicated that they do not conduct reading assessments in third grade to monitor student progress throughout the year. Somewhat surprisingly, these divisions ranged across performance levels, including both high and low performing divisions. Particularly in the case of high performing divisions, it may be the case that other factors, such as teachers highly trained in identifying student reading difficulties, may be compensating for a lack of formalized student assessment data.

In Part to Help With Student Motivation, Reading Material Should Be of High Quality, Engaging, and Available at Different Levels

Besides its omission of writing skills, an additional topic not addressed by the National Reading Panel is that of motivation of student reading. Block and Parris have written that

> The most basic goal of any comprehension program is the development of highly motivated readers who can read, and who choose to read for pleasure and information. However, because motivation is not currently one of the 'five pillars' of reading instruction identified by the National Reading

> Panel Report (2000)… it does not receive the same focus or emphasis as the instructional goals. While all students deserve high-quality instruction in these areas, it is clear that if our students are not motivated to read, they will never reach their full literacy potential.

In *Reading Instruction That Works: The Case for Balanced Teaching,* Michael Pressley, a leading reading expert, expressed more concern with "the documentation of steadily declining motivation as students proceed through school" than with test scores. Pressley noted that kindergarten and grade one children "believe they can do anything," and "if you ask them whether they are going to learn to read, they are certain of it". But by fifth or sixth grade, students are much less confident, much more aware of their failures than their successes, and less inclined to read. In a survey cited by Pressley of 17,000 elementary students in grade one to six from across the country, for both genders and all ethnic and racial groups and ability levels, "there were clear declines in the positive attitudes of students toward reading." Other research also supports this finding.

Purpose of Reading Instruction

A concern of some reading experts is that with an emphasis placed upon test score improvements, teachers and children may see reading activity as fundamentally about test success rather than see it as an end in itself. By providing lessons "relevant to the surface structures of tests", Guthrie has noted, some gains can be achieved on accountability tests, but it is not as useful in promoting high levels of proficiency in reading comprehension. When teachers view engaged reading as an end in itself, more authentic reading and learning is likely to take place.

While schools and school divisions have primary responsibility to monitor and improve student motivation, the State can impact the climate in which they operate. Through the SOLs, the State pays substantial attention to student reading performance. However, the State does not so clearly demonstrate its interest in whether students are learning to enjoy reading and are motivated to read, or are enjoying it less and are becoming less inclined to read voluntarily.

Addressing the decline in motivation to read during the elementary school years likely requires action in a number of areas. As indicated by McKenna, reading instruction could focus more upon the question of how we get more children to a point where reading is seen by them as a high benefit and low cost (low stress and strain) activity. Building reading proficiency is an important part of the equation. McKenna notes that proficiency is the one characteristic that almost all avid readers share, but it is not enough. Catching reading problems early is important both from a performance and motivation standpoint, as successful intervention helps prevent the student from viewing reading as an unduly difficult or unpleasant task or from seeing himself or herself as a poor reader. Focusing student attention on their own reading progress, as opposed to how they stand against other students, also helps sustain motivation. Also of value, however, is having reading material in the classroom, the library, and the home that is high quality, engaging, and of varying levels of difficulty.

Research shows that high-quality literature in the early grades promotes reading engagement and growth in children. For example, Pressley references research carried out in the 1980s which found that more interesting text held the attention of students better and was much more likely to be remembered by students than uninteresting text. *Improving Reading Comprehension in Kindergarten Through Third Grade*, a report prepared for the Institute of Education Sciences (IES), indicates that "teachers should select texts that are compelling enough to spark a discussion." Additional points made in the research are that (1) classroom and libraries have tended to be filled with books that are not very interesting to young children, (2) award-winning children books cherished by adults may not have the same appeal for children, (3) books with animals, humor, and the weird or the scary are frequently appealing to children, (4) giving students choice in what they read is motivating, and (5) having students read books that are "a little bit beyond the learner's current competence level" is good for motivation.

Genres of Text

Literary texts include fiction, literary nonfiction, and poetry. Examples include historical fiction, fables, and autobiographies.

Informational texts include expository writing, pieces that argue in favor of one position or another, and procedural texts. Examples include news articles, speeches, and timelines.

Source: Institute of Education Sciences, *Improving Reading Comprehension in Kindergarten Through 3rd Grade*, 2010.

However, not only does text need to be interesting and engaging, it should cover a wide variety of genres. The IES report recommends that teachers use both literary and informational texts to teach reading comprehension because a student's mastery of one type of text does not necessarily transfer to the other. In addition, all students should have access to a range of quality literature at their reading levels. This is a requirement to provide small-group, differentiated instruction. However, it is also important that classroom libraries contain books on a variety of topics that range in difficulty from considerably above grade level to below grade level. In *Schools That Work*, Allington and Cunningham make the point that large amounts of easy-to-read books are particularly important for developing reading fluency and providing practice in using reading strategies. As stated by Allington and Cunningham,

> …enormous amounts of easy and interesting reading are absolutely essential to developing effective reading strategies, to say nothing of appropriate attitudes and responses. When children struggle with the material they are reading, they cannot apply the strategies that good readers use, and they do not develop the habits and attitudes that good readers do.

The JLARC staff survey of school divisions asked respondents to indicate their satisfaction levels with the availability of diverse and engaging reading material for children in their schools. Forty-two percent of divisions reported being very satisfied with the reading materials, but 49 percent reported being only somewhat satisfied, and nine percent reported not being satisfied. The level of satisfaction was fairly consistent across both high and low per-

forming divisions, although low-performing divisions were slightly more likely to report not being satisfied.

Book Rooms Provide a Range of Reading Material. One approach to providing text at different reading levels are book rooms. Book rooms contain a collection of books at different levels of difficulty, on different themes, of different genres, and by different authors for use by the whole school faculty. Figure 8 is a photograph of a book room at one of the Virginia elementary schools visited by JLARC staff.

Figure 8: A Book Room in a Virginia Elementary School

Source: JLARC staff site visits to Virginia school division.

Based on the site visits, book rooms appear to be gaining popularity in Virginia's schools and are particularly useful for facilitating small-group, differentiated reading instruction. Federal Title I funds were cited as a source of funding to establish book rooms in Title I schools. One central Virginia school indicated that its newly established book room will have 301 titles with six copies of each title (for a total of 1,806 books). Each title will be labeled and indicate the reading levels for teacher use.

Technology May Enhance Learning. One potential means of providing adequate and interesting reading material is through technology. Some researchers indicate that people read differently in digital versus paper-based environments, and thus students need to be exposed to both types of reading material. In addition, the third grade reading SOL test is currently being administered on com-

puters in many schools, and all third grade students will be required to take the test online beginning in the spring of 2013.

The IES report also contends that students should learn to read and comprehend both literary and informational texts in digital formats. However, other reading experts caution that the effectiveness of technology in teaching reading depends on the particular type of technology and how it is used. For example, research at the Center on Instruction at Florida State University indicates that computer-based instructional materials can provide an effective supplement to teacher-led instruction, but it should not be used as a *substitute* for direct instruction by the teacher.

Among divisions responding to the JLARC staff survey, 76 percent reported that technology is used as part of the third grade reading block. However, top-performing divisions appear to use technology more often than lower performing divisions. Eighty-three percent of the top third of divisions reported using technology as part of the third grade reading block compared to 73 percent of all other divisions.

It is unclear the extent to which the technology itself versus teachers' skill in integrating technology are related to higher reading performance. However, some educators indicate that technology can be fun and motivating for students. Divisions in Virginia report using a variety of software packages and technologies, although some of the most frequently mentioned software packages were SuccessMaker, Accelerated Reader, and Study Island. A number of divisions also indicated that they make frequent use of smartboards as part of their reading program.

OTHER KEY PRACTICES CAN IMPROVE THE SUCCESS OF AN ELEMENTARY READING PROGRAM

In addition to the strategies and practices that directly relate to the classroom reading program, a number of other practices can improve the success of an elementary reading program. Access to preschool, particularly for children at risk for having difficulty in school, can help ensure that students have the pre-literacy skills which will allow them to be successful in learning to read when they enter kindergarten. In addition, some school divisions, particularly those that serve large percentages of students at risk of not succeeding, have found that guidance and direction from the school division on how to structure a reading program can help improve its success.

Preschool Provides Early Literacy Foundation, Particularly for At-Risk Children

National research shows that quality preschool can increase the verbal abilities and school readiness of young children. For instance, in a 2005 study of the effects of state pre-kindergarten programs, researchers at the National Institute for Early Education Research found that state-funded preschool programs have statistically significant and meaningful impacts on children's early language and literacy development. Specifically, they found that state-funded preschool programs produced an increase in children's vocabulary test scores and had a strong effect on children's understanding of print concepts, including letter knowledge. This is particularly true for children who are at risk of not experiencing success in school due to challenges such as coming from a low socioeconomic status.

Virginia Preschool Initiative

This program serves four-year-old children not served by Head Start who are "at risk" of not doing well in school due to challenges such as coming from a poverty background. For the 2010-11 school year, 10,761 incoming kindergarten students attended preschool through the VPI program.

Research conducted by JLARC in 2007 on the State-supported Virginia Preschool Initiative (VPI) found similar effects. The JLARC study found that VPI students' scores on the spring PALS literacy assessment for preschoolers (PALS-PreK) were significantly higher than the predicted scores for these students. (Chapter 1 provides a more detailed description of the PALS literacy assessments.) These positive effects also held in kindergarten. For example, the average fall PALS-K scores were higher for VPI students than for non-VPI students, which is particularly impressive given that VPI students are largely at-risk children. Also, whereas 17 percent of all kindergarteners were identified for intervention based on the fall PALS-K assessment, only 11 percent of incoming kindergarteners who were in VPI were identified for intervention.

More recent research by Huang, Invernizzi, and Drake on the effectiveness of the VPI program reinforces the findings in the JLARC report. The authors found:

> In terms of literacy skills, attending a VPI-funded pre-K program showed a beneficial association for all students. In addition, Black and Hispanic VPI-funded program attendees had a much higher likelihood of meeting minimum literacy competencies at the beginning of kindergarten, compared to Black and Hispanic children who did not have any formal pre-K experience.

During site visits to Virginia school divisions for this study, school division reading coordinators and school-level staff also expressed their belief in the importance of preschool in giving students the early literacy knowledge to help them succeed in kindergarten and later grades. Students not only enter kindergarten with better preliteracy skills and language exposure, but are also more prepared

to function successfully in a school setting. Reading coordinators specifically communicated that VPI and Head Start seemed to have a positive impact on preparing children for kindergarten. Several reading coordinators mentioned that some kids coming out of strong preschool programs, such as VPI, even come into kindergarten already reading.

Table 23 shows preschool participation for incoming kindergarteners in 2010 based on preschool experience data collected by DOE from school divisions. About two-thirds of incoming kindergarten students were reported as having had a preschool experience. The VPI program served the greatest share of these students, followed by commercial or private providers and Title 1 preschool.

Table 23: Preschool Participation by Experience (2010)

Preschool Experience	Percent of 2010 Kindergarteners
Virginia Preschool Initiative Program	14.8%
Commercial or private daycare/preschool	13.3
Title 1 preschool	11.5
Coordinated pre-K classroom	6.9
Head Start preschool	6.4
Preschool special education only	3.4
Government with tuition charges	2.6
Coordinated pre-K & special education	2.5
Licensed family home day-care provider	2.3
Other	2.8
Total percent of kindergarten students with a preschool experience	***66.5%***
No formal pre-K experience	13.5
Data not provided by school	20.4

Source: JLARC staff analysis of preschool experience data provided by DOE.

Although DOE has been collecting the preschool experience data since 2007, the reliability of the data may be questionable due to potential reporting problems from schools. For instance, in 2010 there are several discrepancies in which divisions received State VPI funds but students' preschool experiences were not properly coded as VPI. Table 23 also shows that preschool experience data was not provided by schools for 20 percent of incoming kindergartners in 2010. To improve the usefulness and reliability of the preschool experience data, DOE should work with divisions to improve the accuracy and completeness of the data.

Guidance From the Division Can Be Helpful, Particularly for Lower-Performing Divisions

Another practice that may help lower-performing divisions, in particular, improve their early reading programs is increased guidance from the school division. For example, in *Closing the Gap Be-*

tween Research and Practice: Case Study on School-wide Literacy Reform, Walpole, Justice, and Invernizzi suggest that teachers and students must be supported by administrative efforts to attain coordination among the literacy curriculum. They state that instructional materials must be coordinated with staff development so that teachers have the tools to teach, and interventions must be coordinated with classroom instruction.

Based on the JLARC staff survey of school divisions, the amount of guidance or direction provided on the third grade reading program by Virginia's school divisions varies:

- 47 percent of divisions require a certain approach that schools are expected to follow for the third grade classroom reading program.
- 38 percent encourage a certain approach for the third grade classroom reading program.
- 15 percent of divisions reported that the approach taken for the third grade classroom reading program is determined mainly at the school level.

On average, the level of guidance was not significantly different for top performing divisions compared to lower performing divisions. However, several Virginia school divisions performing better than expected indicated that at least part of the reason they have done so is due to having a clearly articulated plan for the reading program that is used division-wide. In contrast, teachers and school division staff in several low-performing school divisions indicated that increased direction from the division would be helpful. For example, the reading coordinator at one low-performing school division with a high transient student population indicated that one of the weaknesses of the division's early reading program is the significant amount of variability in programs and curricula used by different teachers and schools. For this division, having a more clearly articulated division-wide reading program would lead to more consistency across the division, and division-level staff may be in a better position to help support teachers.

On the other hand, some divisions whose students performed well in 2010 have large variability within their early reading programs and others continue to have problems even with division-level guidance. For example, Patrick County, which had the highest pass rate on the 2010 third grade SOL reading test, allows its teachers and schools a large degree of flexibility in choosing their reading curriculum and structuring the reading block. However, one of the principals in Patrick County acknowledged that this approach would not necessarily work for all teachers. Also, there are examples of school divisions that do appear to provide a fair

amount of guidance for the reading program, but their test scores have not improved as much as the divisions would like. This is not to imply that division-level guidance is not important for some divisions, but that it is not the only strategy or factor that leads to success in improving students' reading abilities.

Chapter 5

Well-Trained and Well-Supported Teachers Are Critical for an Effective Reading Program

In Summary

While non-school factors have a very strong impact upon student achievement, the teacher is the critical factor in determining the effectiveness of the classroom reading program. Even if best practices are used to structure the reading program, if the teacher is not well-trained and effective, he or she will not maximize the development of students' literacy skills. In classrooms with highly effective teachers, students are more engaged, the learning environment is richer, and students learn more. Outstanding teachers were observed by JLARC staff in both higher-performing and lower-performing school divisions in Virginia, but it appeared that lower-performing divisions had "pockets of expertise" with expert teachers not as widespread throughout the division. Ongoing professional development helps lead to highly effective, well-trained teachers. Teachers in lower-performing divisions tended to receive less training on how to teach reading, and fewer of these divisions reported frequent use of best practices for reading instruction. Preparation of new teachers in how to teach reading is also important, and school personnel indicated that some teachers graduating from education programs at Virginia's colleges and universities are not as well trained in teaching reading as they should be.

Adequate support for teachers is also essential. Literacy coaches can be a valuable support to teachers by providing on-site professional development and in-class coaching. Reading specialists are necessary because they provide much needed assistance to struggling students who need additional support beyond the classroom reading program. In addition, many teachers indicated that just having additional adults in the room to assist during the reading block keeps children on task and leads to a more effective reading program.

As described in Chapter 4, the vast majority of divisions are implementing recommended practices for their classroom reading programs. Moreover, few differences appear to exist between the overall structure of the classroom reading programs between high performing and lower performing school divisions. So, what accounts for the differences in the abilities of school divisions across the State to improve the reading performance of their students beyond what might be expected based on socioeconomic factors? Research suggests that it is the quality of the teacher and the support they receive. The literature cites teacher quality as the most important factor within schools that impacts student achievement. As stated by Gambrell, Malloy, and Mazzoni in *Best Practices in Literacy Instruction,*

> What has become increasingly clear through research that probes more deeply into the inner workings of effective

> classrooms is that the teacher is the crucial factor in the classroom. In fact, study after study points to teacher expertise as the critical variable in effective reading instruction.

The precise extent of impact has not been determined, but analytical work done to date (not limited to reading) suggests that teacher quality may account for about 7.5 to 22 percent of the variation in student achievement.

Based on JLARC staff research, divisions whose students exceeded expectations in 2010 tend to have better trained, more effective, and better supported teachers than divisions performing below expectations. As discussed in Chapter 3, the performance expectations for divisions were based on socioeconomic factors which are beyond a school division's control but have a demonstrated association with SOL performance.

EFFECTIVE, WELL-TRAINED TEACHERS ARE CRITICAL

Whether the strategies and practices described in Chapter 4 are ultimately successful depend on how well they are implemented in the classroom by the teacher. According to Walpole, Justice, and Invernizzi in *Closing the Gap Between Research and Practice,* "Teacher expertise, more than any other variable, accounts for increases in student achievement in reading and other academic areas." Teachers require adequate training to know how to identify children experiencing reading difficulties and to deliver classroom-based large- and small-group research-driven instruction. In other words, even if the reading block is 120 minutes and small-group differentiated instruction is utilized daily, if teachers are not well trained in how to effectively teach the key components of a classroom reading program and how to effectively manage their classrooms, they will likely not be successful in maximizing the development of their students' literacy skills.

What Qualities Make an Effective, Well-Trained Teacher?

Given the importance of developing literacy skills to students' academic future, it is crucial to recognize the qualities that make an effective, well-trained teacher when teaching reading in an early elementary classroom. These teachers greatly affect the learning experience of students. In classrooms with effective teachers, students are more engaged, the learning environment is richer, and students learn more than in classrooms with less effective teachers. Perhaps most importantly, students enjoy school more.

The Classrooms of Exemplary Reading Teachers. Research by Michael Pressley in *Reading Instruction That Works: The Case for Balanced Teaching* and that of other early reading experts shows

Scaffolding

Scaffolding is an instructional technique in which the teacher models the desired learning strategy or task, then gradually shifts responsibility to the students to take on more and more responsibility for their own learning.

Source: North Central Regional Educational Laboratory.

that exemplary primary-level reading teachers share key common characteristics. For instance, outstanding teachers overtly model positive attitudes towards literacy. They have deep concern with the development of reading skills and report developing particular competencies as part of their reading instruction, including decoding strategies, sight words and vocabulary, spelling, comprehension strategies, and critical thinking skills.

Exemplary teachers are more likely to explicitly teach effective comprehension strategies (such as making predictions, mental imagery, and summarizing) and employ higher-order questioning. Focused, high-quality discussions (including questions requiring inferences and integration) help students develop a deeper understanding of what they read and go beyond simply asking and answering surface-level questions on the text. Outstanding teachers also employ academic coaching and scaffolding techniques, such as hints and prompts, much more extensively with their students as well as modeling how to apply comprehension and other reading strategies. They also attempt to create a reading environment in the classroom, including an in-class library, display of student work, and display of chart stories and poems. Further, they report providing daily practice of reading and writing, with limited practice of skills in isolation, such as with worksheets or workbooks.

Example of Modeling How to Think About a Question for Younger Students

The teacher could say: "The question asks about what koalas eat. I am going to look for a heading that talks about food or eating. Headings are these larger, bold-face words that tell us what a part of the text is about. Here's a heading that says 'Food for Koalas.' I am going to read that section. I think it will tell me what koalas eat."

Source: Institute of Education Sciences, *Improving Reading Comprehension in Kindergarten Through 3rd Grade.*

Exemplary teachers report extensive monitoring of their students, including comprehension checks, writing portfolios, and reading portfolios. They express concern with the individual literacy achievement of students, monitoring student needs, giving mini-lessons, and re-teaching as needed. They report making certain that skills not yet mastered by their students – such as phonics or spelling – are experienced repeatedly by students, and they provide more guidance to weaker readers than to stronger ones. As a result, students in exemplary classrooms are busy and learning, in part, because they receive help as they need it. Outstanding teachers also report regular conferences with parents and frequent communication with the student's home as part of accountability.

Exemplary teachers include small-group instruction daily to target instruction to students' specific literacy needs, allowing teachers to make the most of direct instruction. Children are grouped and regrouped throughout the year based on their literacy levels. Reading and writing are portrayed as individually guided on student-by-student basis.

Many different types of reading occur in the classrooms of exemplary teachers, including students reading along with the teacher, echo and choral reading, shared reading, students reading aloud with others, daily silent reading, student rereading of books and stories, and reading homework. There is also more independent

reading in the classrooms of highly effective teachers. Many different types of material are read in these classrooms, including exceptional children's literature, big books, poems and stories, picture books, and patterned and predictable books.

Exemplary teachers integrate literacy instruction with the rest of the curriculum, and they present their classrooms as places in which literacy development occurs throughout the day. A great deal of writing is also reported by expert teachers and writing is viewed as connected to reading. They explicitly teach the writing process, including planning, making drafts, and revising, and demand more use of writing conventions, such as capitalizing, using punctuation, and correct spelling of high-frequency words.

Outstanding teachers are clearly concerned with motivating their students to do literate things. They report motivating literacy by reducing risks for students in attempting literate activities, setting an exciting mood, and encouraging students to believe that they can be good readers and writers. Their classrooms are filled with the message that students can and will learn, and every student is reinforced for his or her achievements.

Finally, exemplary teachers are also masterful classroom managers. They are so good, in fact, that classroom management is hardly noticeable. In the best classroom, students are busy and appear to be happy with virtually no misbehavior observed. The worst that happens in these classrooms is students getting off task, which typically ends quickly as the teacher moves in to get the student back on task, quietly, and positively. There are also consistently high levels of engagement in the rooms of outstanding teachers, even when the teacher is not present or attending to the class. Instruction by expert teachers does not make children dependent on the teacher. Rather, self-regulation is common. Exemplary teachers are also efficient—introducing stories, demonstrating strategies, and engaging students in follow-up activities in about half the time as in typical classrooms. As a result, many more skills are covered during each hour of instruction in effective classrooms compared to less effective ones.

Exemplary Teachers Observed in Virginia's Third Grade Classrooms, but There Is Room For Improvement. During site visits conducted by JLARC staff to third grade classrooms across Virginia, outstanding and effective teachers were observed in nearly all school divisions—both strong divisions and lower-performing ones in terms of third grade reading. The difference was that in higher performing divisions, effective, well-trained teachers were observed more frequently and seemed to be part of a larger teaching culture. Lower performing divisions seemed better characterized as having "pockets of expertise" with expert teaching not as wide-

spread throughout the division. As discussed above, students' learning experience is greatly influenced by the effectiveness of the teacher. For example, the case study below illustrates two very different student experiences based on the classroom management skills of two Virginia teachers.

Case Studies: Contrasting Examples of Classroom Management

Strong classroom management in Classroom A was key to a productive reading block. Throughout the reading block, the teacher alternated between whole class and small group instruction. Very little time was wasted during transitions between whole group and small group, and students were almost immediately on task after a transition. Students not working with the teacher during small-group time worked independently on activities such as silent reading, writing in journals, word study activities, and literacy activities on the computer. Whether working in a small group, independently, or as the whole class, nearly all students were consistently on task throughout the reading block. Classroom A was observed in a school with a high pass rate on the third-grade reading SOL test in 2010.

* * *

Classroom B illustrates what happens when a teacher is not skilled in classroom management. The teacher started the reading block by reading a story to the whole class for about 20 minutes. Initially it was difficult to hear because the teacher had a somewhat quiet voice and the students were not quiet. Many of the children were moving around to either sharpen pencils or use the bathroom. It wasn't until ten minutes into the story that the class calmed down. Next the class transitioned to small group time. The students working with the teacher appeared engaged and on task. The rest of the class was supposed to be working in pairs or individually, but more than one-third of these students were not engaged or on task. Transitions between activities did not go well and a substantial amount of pencil sharpening continued. Throughout the reading block, on average only 65 percent of students were on task. One student, a frequent pencil sharpener, did not appear to be on task at any point during the reading block except for the time she spent in small group. Classroom B was observed at a school with a low pass rate on the 2010 third grade reading SOL test.

During observations of third grade classrooms, JLARC staff kept a record of classroom reading block activity. In general, there were many positive attributes seen in Virginia's third grade classrooms,

JLARC Staff Third Grade Classroom Observations

JLARC staff recorded the activities of third grade classroom reading blocks using the *School Change Classroom Observation Manual* by Barbara M. Taylor. Observations were recorded in five-minute increments across a variety of categories including type of literacy activity, who was providing the instruction, type of grouping used, the major focus of the activity, type of materials used, teacher interaction style, expected student response, and the number of students on task.

but there is room for improvement. For example, as illustrated in the case study above, student engagement is an important measure that affects the learning environment of students. In *Beating the Odds in Teaching All Students to Read: Lessons from Effective Schools and Accomplished Teachers,* Taylor, Pearson, Clark, and Walpole found that the most accomplished teachers had higher pupil engagement (96 percent of students on task on average) than teachers identified as moderately accomplished (84 percent on task on average). In contrast, the least accomplished teachers had only 61 percent of students on task (on average). (Teacher level of accomplishment was determined based on observations reviewed by experts in elementary school supervision and reading.)

Table 24 shows that across the 13 Virginia school divisions in which JLARC staff conducted classroom observations, the average percent of students observed on task was 90.9 percent. The table also ranks the divisions by student engagement, and shows how these compare to the average student engagement for the most accomplished, moderately accomplished, and least accomplished teachers based on the research by Taylor et al. For the most part, the Virginia classrooms observed by JLARC staff fell within student engagement range for the moderately and most accomplished teachers. Division 1 had a very high student engagement level

Table 24: Student Engagement in the Classrooms Observed Was Generally Good

	Percent of Students On Task
Division 1	98.1%
Division 2	97.8
Benchmark: Average Time on Task for Most Accomplished Teachers	***96.0***
Division 3	94.9
Division 4	93.7
Division 5	92.9
Division 6	92.8
Division 7	90.2
Division 8	90.1
Division 9	89.8
Division 10	89.0
Division 11	86.2
Division 12	84.5
Benchmark: Average Time on Task for Moderately Accomplished Teachers	***84.0***
Division 13	75.6
Benchmark: Average Time on Task for Least Accomplished Teachers	***61.0***
All Division Observations	***90.9%***

Note: Based on an average of the students on task for each five-minute observation block.

Source: JLARC staff analysis of data collected during staff observations of third grade classrooms.

with an average of 98.1 percent of students on task. However, division 13 fell between the average percentages for moderately and least accomplished teachers, with an average of only 75.6 percent of students on task.

There were also differences observed across teachers in different divisions regarding the use of various comprehension techniques. Teachers in both higher-performing and lower-performing divisions taught comprehension strategies and asked higher level comprehension questions with about the same frequency. However, teachers in lower-performing divisions asked lower level comprehension questions over 60 percent more frequently than teachers in higher-performing divisions.

In addition, teachers varied in their ability to generate student discussion and interest in a text. For example, some third grade teachers are using literature circles to spark student discussion of texts. Literature circles are like a student book club, where students in small groups discuss a book they have all read with little or no structure imposed by the teacher.

In other classrooms, however, teachers seemed to miss opportunities for discussion with students, or seemed somewhat impatient or prematurely cut short students' discussion of text. In one classroom, for example, the students in small group instruction took turns reading poems out loud that they had written (including a particularly striking poem by one student), but discussion of the poems was not encouraged. Limitations in the extent of discussion may be partially related to time constraints involved with conducting small group differentiated instruction with multiple groups. Reading blocks should be long enough to enable teachers to engage in small group discussion with their students.

Some of the classrooms observed by JLARC staff were in divisions in which the 2010 SOL reading test scores demonstrated rather weak performance by their students relative to what would be expected. In general, however, these divisions were actively seeking to make improvements in third grade reading instruction. Actions taken during the 2010-2011 school year to bring about improvements varied in detail but did focus upon improving the quality of instruction. Several divisions were working with reading experts to implement best practices into their early elementary reading programs and better train their teachers. (As will be discussed in the next section, teacher training can greatly improve teachers' effectiveness in teaching reading.) Several teachers and administrators participating in this study indicated that third grade produces the greatest stress in elementary school teaching. In reaction to this, one school reassigned teachers overly stressed by the de-

mands of third grade and replaced them with a set of teachers eager for the challenge.

The actions being taken in some divisions to improve instruction offer an opportunity for the State to identify the most effective approaches. Therefore, it would be prudent for DOE to systematically obtain information from these divisions regarding the actions they are taking in the hopes of bringing improvement to their third grade reading results. (This may already by taking place, to some extent, through DOE's Office of School Improvement.) This information could help the department assess the impact of the practices and increased teacher training upon reading performance.

Recommendation (3). The Department of Education should collect information from lower performing divisions that have recently made changes such as enhanced teacher training in an effort to improve student reading performance in the early grades. The department should then assess whether these actions have had a positive effect on student reading performance in these divisions and, if so, whether these actions could be adopted by other school divisions to improve reading instruction.

Providing Ongoing Professional Development Is Key for Helping Teachers Succeed

The goal of school divisions should be to develop their teachers so that every teacher is maximizing his or her potential for teaching reading.

As with every profession, some individuals are naturally more skilled at teaching, and for some individuals it is more of a struggle. Not everyone will be a star teacher. However, the goal of school divisions should be to develop their teachers so that every teacher is maximizing his or her potential for teaching reading. Research shows that providing high-quality, ongoing professional development is key in helping teachers with this endeavor. Further, strong professional development goes beyond single session workshops and offers repeated exposures in which new teaching behaviors are learned over time in the classroom. Areas in which professional development for early elementary school teachers is particularly important include the foundations of teaching reading, differentiated instruction, and classroom management.

Foundations of Teaching Reading and Comprehension in Particular. Continued training in the foundations of teaching reading is critical to the quality of a reading program. Teachers should use the most effective tools and strategies available (such as those described in Chapter 4) for teaching the six key components of a reading program—phonemic awareness, phonics, fluency, vocabulary, comprehension, and writing. Early reading experts in Virginia generally agree that Virginia teachers, in large part, are adequately trained on components such as phonemic awareness and phonics. However, they also tend to agree that teaching reading

comprehension is the area in which teachers need the most professional development. This is consistent with the national research on comprehension instruction. The effect this has had on classroom teaching has also been noted. As stated by Pressley, "although the development of comprehension ability is a widely agreed upon goal of literacy instruction, it rarely is offered as systematically as it could be in the early grades."

Reading for comprehension is a complex task and it is not easy to teach. Part of the difficulty in is that to teach it well, teachers need to explicitly model for students the thought processes involved in comprehension that most adults take for granted. For example, most adults are not conscious of the extent to which the reading process involves making predictions and constantly adjusting those predictions. Yet as Duffy has explained:

> Comprehension is an active cycle of mental activity. It starts when readers anticipate meaning by predicting ahead of time what they will find in a passage. But predicting is only the beginning of the process of seeking meaning. As readers move into the text, they monitor, they question, and, when necessary, they abandon the prediction they made earlier and make a new prediction. In short, good readers do not sit back and passively wait for meaning to come to them. They talk to themselves about the meaning they are building.

Researchers have found that some students who do not pass reading assessments are able to "read" printed sentences with relative ease but in the end, cannot tell anyone what the text was about. Educators refer to these students as "word callers," and they may puzzle teachers with their high decoding skills but poor comprehension. Some teachers interviewed for this study noted the presence of word callers in their classrooms and expressed a desire for more information on how to help these students. Research has been done on effective strategies for reaching these students, and educators need to be aware of the resources that are available. (One book which describes best practices for reaching these students is Kelly Cartwright's *Word Callers: Small-Group and One-to-One Interventions for Children Who "Read" but Don't Comprehend.*)

Research shows that being able to teach students comprehension strategies and higher order, critical thinking skills is crucial to developing their reading skills. The report, *Improving Reading Comprehension in Kindergarten Through 3rd Grade* (prepared for the Institute of Education Sciences), reviewed the relevant research and found strong support for the effectiveness of teaching students how to use reading comprehension strategies. Research also sup-

ports that students exposed to higher order thinking comprehend more than students who are asked lower order questions. According to Allington and Cunningham in *Schools That Work*, the most consistent variable related to reading achievement growth is teacher emphasis on higher-order thinking. Given the importance of reading comprehension in reading achievement, it is critical that teachers be trained in how to skillfully teach students both the explicit strategies and higher order, critical thinking skills necessary to develop reading comprehension.

Differentiated Instruction. Training in how to provide differentiated instruction is another area in which professional development can be very helpful for teachers. Teachers not only need to be able to provide skillful instruction at the whole classroom level, but they should also be able to work effectively with small groups of students who have different instructional needs. However, as indicated by the Center on Instruction, appropriately differentiated instruction involves even deeper knowledge of teaching skills than whole-classroom instruction because it requires teachers to diagnose individual needs and make appropriate adjustment to their instructional focus and routines. The design of differentiated instruction also demands a high level of understanding of reading development and thoughtful attention to data. The case study below, in which a Virginia teacher observed during a JLARC staff site visit successfully implements both whole class and small-group instruction, illustrates the complexities of this instructional approach.

Case Study: Effective Implementation of Both Whole-Group and Small-Group Differentiated Instruction

The reading block alternated between whole-group and small-group differentiated instruction. The teacher met with multiple small groups during the reading block and the reading material for each group was differentiated based on students' reading levels. During both the small group and the whole group, the teacher asked many higher level comprehension questions and modeled comprehension strategies. The teacher was effective in coaching her students and scaffolding their knowledge in both the whole-group and small-group settings.

Students not working with the teacher during small-group time worked independently on activities such as silent reading, writing in journals, engaging in word study activities, and using the computer. While the activities students were independently engaged in were similar, they were clearly differentiated based on reading and word-study level. For example, the level of books being read by different students during silent reading varied widely.

Classroom Management. Classroom management is another key area in which professional development can enhance the learning experience of students. As explained in the description of exemplary reading teachers, well-trained teachers are efficient, and as a result, are able to cover more skills per hour of instruction. Perhaps even more importantly, teachers who are skilled in classroom management are better able to keep students engaged and on-task. Allington and Cunningham reference a study of 100 teachers where it was found that in some classrooms only about half the children were engaged in the learning activities in front of them, while in other classrooms about 90 percent were engaged. Not surprisingly, children who are engaged in academic work learn more than those who are simply sitting at their desks waiting for the next activity to begin.

Skilled classroom management is particularly important in the context of small-group differentiated instruction because, during the time when students are not working with the teacher, they frequently are working independently or with a few of their peers. In the previous case study contrasting the two examples of classroom management, the independent work time for the frequent pencil sharpener in Classroom B likely had little to no educational value. It is worth noting that the teacher in classroom A (the successful classroom) reported feeling that she had been well-trained in classroom management and how to provide small-group, differentiated instruction. In contrast, the teacher in classroom B was a young teacher who did not feel that she had been given much direction in this regard, but was anticipating upcoming access to a professional development opportunity.

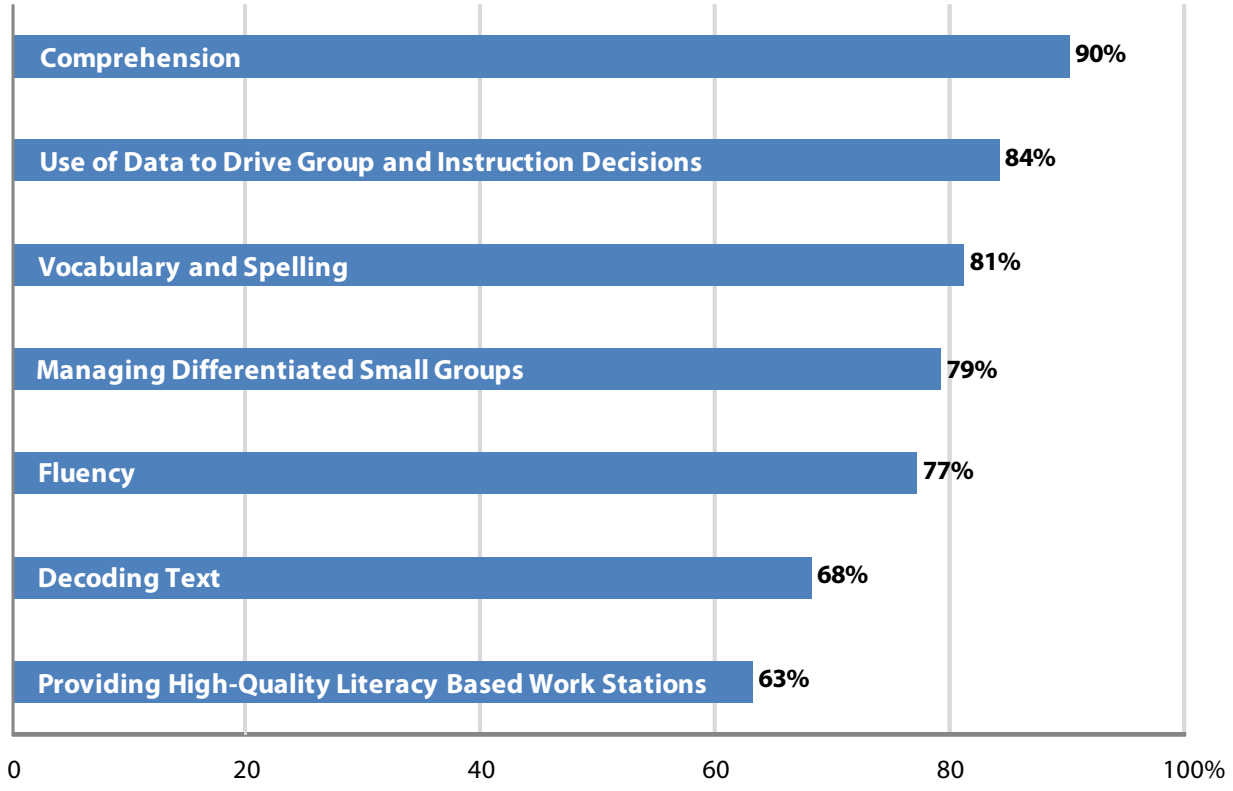
Status of Reading-Related Training for Elementary Teachers in Virginia. As noted in Chapter 3, when asked to rate their satisfaction levels with 12 different aspects of their kindergarten to grade three reading program, on average divisions rated their ability to attract and retain quality teachers more highly than the extent of training and the understanding of best practices for teaching reading that exists among their teachers. On a scale of response ranging from three for very satisfied, two for somewhat satisfied, and one for not satisfied needing much improvement, the extent of training and understanding of best practices scored an average of 2.04. This average compared to an average of 2.40 for division ability to attract and retain quality teachers. Further, the average score for the effectiveness of all teachers in teaching comprehension was a 1.97, ranking the item tenth among the 12 aspects explored.

Still, the majority of divisions in Virginia report having provided targeted professional development on how to teach reading, although teachers in lower performing divisions are less likely to

have received such training. Based on the JLARC staff survey of school divisions, 80 percent of divisions report having provided targeted professional development or training for third grade teachers on how to teach reading. However, only 64 percent of the lowest quartile of divisions (based on performance) reported providing targeted professional development or training on how to teach reading.

For those divisions providing targeted professional development or training on how to teach reading, Figure 9 shows that comprehension was the top area in which divisions provided training (90 percent of divisions). In addition to the areas shown in the figure, a number of divisions also reported providing training in reading assessment and writing.

Figure 9: Percent of Divisions Providing Training in Different Areas Related to Reading



Source: JLARC staff survey of school divisions, spring 2011.

Access to training, or lack thereof, appears to affect the use of recommended practices and strategies for teaching reading. For example, Table 25 shows that, in most cases, fewer of the bottom quartile of divisions (in terms of performance) frequently emphasized or used recommended methods for improving reading comprehension compared to other divisions.

Table 25: Fewer Lower Performing Divisions Report That They Frequently Emphasize or Use Recommended Strategies to Teach Reading Comprehension in Third Grade

Reading Comprehension Method or Strategy	All Divisions	Bottom Quartile of Divisions Based on Performance
Use of story comprehension questions and answers	83%	90%
Developing background knowledge and encouraging students to relate text to existing knowledge	80	71
Increasing student vocabulary	77	65
Use of graphic representations of text and/or story maps	76	58
Modeling comprehension strategies out loud	73	55
Summarizing reading passages	72	64
Use of multiple strategy instruction	65	52
Analyzing text/story structure	61	55
Encouraging cooperative learning and comprehension strategies among students	50	27
Encouraging student question generation	50	42
Encouraging student self-monitoring to become aware of when and where they have problems	46	23

Note: Table shows percent of divisions reporting that they frequently emphasize or use designated strategies. Division performance is based on their actual third grade reading SOL pass rate compared to their predicted pass rate.

Source: JLARC staff survey of school divisions, spring 2011.

Virginia's school divisions appear to generally recognize the impact of teacher training on student reading performance. For instance, the JLARC staff survey asked divisions which factors seem to account for the average increase or decrease in third grade reading SOL pass rates between 2008-2009 and 2009-2010. For those divisions that experienced an increase in their pass rate, professional development was cited as a top factor contributing to the increase. Likewise, for those divisions that experienced a decrease in their pass rate, *lack* of professional development was reported as a top factor.

Divisions also provided their opinions on the areas in which additional training or guidance is most needed for third grade teachers in reading. Table 26 shows that, in general, the top three areas indicated by divisions are managing differentiated small groups, using data to drive grouping and instruction decisions, and comprehension. These priorities were fairly consistent across both higher performing and lower performing divisions. However, a greater proportion of lower performing divisions also felt additional training was needed in the areas of decoding text and fluency. Notably, a higher proportion of lower-performing divisions (nearly one-fifth) indicated their view that their teachers are well trained in all aspects of teaching reading, compared to only five percentage of higher-performing divisions and ten percent of divisions overall.

Table 26: Areas in Which Divisions Indicated That Additional Training or Guidance Is Most Needed for Third Grade Teachers in Teaching Reading

Training Area	All Divisions	Top Third of Divisions Based on Performance*	Bottom Third of Divisions Based on Performance
Managing differentiated small groups	69%	54%	77%
Using data to drive grouping and instruction decisions	66	57	74
Comprehension	65	62	69
Vocabulary and spelling	50	54	51
Fluency	35	30	51
Decoding text	25	14	41

Note: Table shows percent of divisions indicating that additional training or guidance is needed in designated areas. Division performance is based on their actual third grade reading SOL pass rate compared to their predicted pass rate.

Source: JLARC staff survey of school divisions, spring 2011.

Preparation of New Early Elementary Teachers Has Been a Concern

Research on the impact of teacher characteristics and student achievement (not limited to reading) has indicated that it is a challenge for new teachers to produce learning gains in students. These studies show that, on average, beginning teachers produce smaller learning gains among students than more experienced teachers. Growth in teacher effectiveness appears to continue over at least the first five years in teaching. To counteract this general trend, it seems useful to facilitate the skill of new teachers to the extent feasible. A concern that was repeatedly voiced by Virginia school divisions during site visits is the readiness of new teachers to teach reading in the early grades. Reading coordinators and principals indicated that some new teachers coming out of Virginia colleges and universities are not well trained in or comfortable with teaching early reading. New teachers, these school staff noted, come into the classroom knowing best practice "buzzwords" and theory, but may have a limited understanding of how to apply the theory in the classroom. School staff also expressed the concern that many new teachers do not have the knowledge or skills for diagnosing a problem or determining what is needed to better assist children who experience difficulty progressing with reading.

While reading specialists (discussed later in this chapter) are ideally available to assist children with more serious reading problems, it is also necessary for the classroom teacher to be well versed in teaching the key components in reading and to detect why children may be having difficulty. In addition to the foundational skills for teaching reading, reading coordinators, principals, and teachers themselves indicated that more could be done in education preparation programs to train future teachers in how to ef-

fectively conduct small-group, differentiated reading and how to use data to group students into different reading levels.

As required by Section 22.1-298.2 of the *Code of Virginia,* education preparation programs at Virginia's colleges and universities must meet the requirements for accreditation and program approval that are prescribed by the State Board of Education. The board's regulations governing education programs are set forth in the *Regulations Governing the Review and Approval of Education Programs in Virginia.* The regulations state the required competencies that professional education programs must cover, including competencies for teaching reading that must be covered by all teacher education programs in early/primary and elementary education.

Effective September 21, 2007, the regulations have also required colleges and universities to report biennially to the board on a number of accountability measures for their teacher preparation programs. One measure is the pass rates for students completing and exiting the programs on several professional assessments required for licensure, including a reading assessment for individuals seeking to teach at the elementary level. As of July 2010, candidates completing and exiting a teacher preparation program must achieve an 80 percent pass rate on the reading assessment for the program to remain accredited. (This is an increase from the 70 percent pass rate required prior to July 2010.)

In July 2011, the board began requiring a new reading assessment for prospective elementary teachers—the *Reading for Virginia Educators (RVE): Elementary and Special Education Teachers Assessment.* (Prospective reading specialists are also required to take a separate version of the RVE.) The RVE has the stated purpose of measuring "whether entry-level elementary or special education teachers have the content knowledge and skills related to teaching reading believed necessary for competent professional practice." Field tests for the RVE show a pass rate of slightly over 50 percent. According to DOE staff, this may indicate that some colleges and universities will need to improve their teacher preparation programs in the area of reading to ensure that the pass rate for the RVE for program completers and exiters biennially is at least 80 percent. This may also help address school divisions' concerns related to the preparation of new teachers in reading instruction.

Another accountability measure required for the biennial report is evidence of employer job satisfaction with candidates completing an education program. This is done through surveys administered by colleges and universities to school divisions. To make sure that these surveys are an accurate reflection of the preparedness of new teachers in reading instruction, school divisions should ensure that

they fully participate in the surveys and that input is obtained from school level staff, including principals, when completing these surveys. DOE staff indicate that the results of these surveys are reviewed, among many other factors, when colleges and universities seek reaccreditation for their teacher preparation programs. If DOE continues to see dissatisfaction on the part of school divisions through the surveys that has not been addressed by the colleges and universities, DOE should consider whether requirements related to preparation in reading instruction should be strengthened in the State's program regulations.

SUPPORT FOR EARLY ELEMENTARY CLASSROOM TEACHERS IS CRITICAL

In addition to being adequately trained, teachers must be well supported to maximize the effectiveness of the classroom reading program. During site visits to school divisions, teachers in higher performing divisions often said that they receive the support they need when they need it. Conversely, in weaker divisions, teachers more frequently reported that they were not as well supported or the support did not meet their needs.

Supports that can be particularly helpful to classroom teachers related to reading include literacy coaches and reading specialists. Literacy coaches work directly with teachers to improve teachers' classroom skills for teaching reading. Reading specialists work with struggling students whose needs cannot be fully met by the classroom reading program. In some schools, the same individuals serve both of these roles. However, in other schools, individuals are solely dedicated to being either a literacy coach or a reading specialist. In addition, many teachers report that simply having additional adults in the classroom during the reading block is helpful, particularly during small group instruction.

Reading First Increased the Prevalence of Literacy Coaches

There has been a rapid proliferation of literacy coaches in the U.S. as a result of the federal Reading First initiative. Reading First was authorized under the No Child Left Behind Act of 2001. Reading First provided large amounts of federal funding for professional development, which many states chose to use for literacy coaches. As of the 2010-2011 school year, Reading First is no longer funded. However, literacy coaches continue to be a part of the reading program in many schools.

Literacy Coaches Can Improve the Effectiveness of Teachers

An important source of support for classroom teachers is literacy coaches. Literacy coaches support teachers by providing professional development in how to teach reading rather than providing assistance and intervention services to students. What distinguishes the role of a literacy coach from other school staff is the in-class coaching and on-site professional development that they provide to teachers. This is significant because research shows that one-time professional development workshops for teachers are often not effective in producing changes in classroom teaching practices or student learning.

There is not a consistent definition of a literacy coach, and their roles may vary depending on how they are defined. The International Reading Association (IRA) describes a range of activities in

which literacy coaches may be involved (Figure 10). However, the allocation of time spent on these activities may vary in different schools, and some coaches may be involved in activities outside of those listed in the figure.

Figure 10: Literacy Coaches May Be Involved in a Range of Activities

Informal
- Conversations with colleagues (identifying issues or needs, setting goals, problem solving)
- Developing and providing materials for/with colleagues
- Developing curriculum with colleagues
- Participating in professional development activities with colleagues
- Leading or participating in study groups
- Assisting with assessing students
- Instructing students to learn about their strengths and needs

More Formal
- Co-planning lessons
- Holding team meetings (grade level, reading teachers)
- Analyzing student work
- Interpreting assessment data (helping teachers use results for instructional decision making
- Individual discussions with colleagues about teaching and learning
- Making professional development presentations for teachers

Formal
- Modeling and discussing lessons
- Co-teaching lessons
- Visiting classrooms and providing feedback to teachers
- Analyzing videotape lessons of teachers
- Doing lesson study with teachers

Source: *The Role and Qualifications of the Reading Coach in the United States*, International Reading Association, 2004.

Both nationally and in Virginia, school-level staff with access to literacy coaches generally report that they are a valuable resource. *A Study of the Effectiveness of K-3 Literacy Coaches* by the National Reading Technical Assistance Center (NRTAC) found that

- the vast majority of principals agree that the coach is a knowledgeable and valuable resource who effectively provides ongoing support for teachers, and

- the vast majority of teachers agree that the support they receive from their coach is helpful in supporting their implementation of [scientifically-based reading instruction] strategies, and that the coach is a knowledgeable and valuable resource.

This perspective was echoed to JLARC staff during site visits to Virginia school divisions. Teachers in schools that have or have had access to literacy coaches found them to be quite useful. In schools without access to literacy coaches, teachers often indicated that the coaches would be helpful and they wished they had greater access to literacy coaches.

Research on the Effectiveness of Literacy Coaches. Research on the effectiveness of literacy coaches has been somewhat mixed, although recent research has been more supportive of coaches. While several studies carried out in 2007 and 2008 did not find positive effects on student achievement, studies since then have found significant impacts on reading achievement related to literacy coaching.

Rita Bean, in *Rebuilding the Foundation: Effective Reading Instruction for 21st Century Literacy*, and researchers at UVA posit several reasons for why research on the effectiveness of literacy coaches has yielded mixed results. First is the lack of clear definition for literacy coaches, which leads to varying amounts of time that the coaches spend with teachers versus conducting other activities. In looking across studies addressing coaching activities, Bean concluded that coaches often do not spend the majority of their time with teachers. In those studies in which literacy coaches showed a positive impact, literacy coaches spent comparatively more time directly with teachers.

Another factor likely affecting the impact of literacy coaches relates to training. While broad guidelines exist for the skills and qualifications that a literacy coach should have, many states, including Virginia, do not specify a certification or endorsement that literacy coaches must obtain. For example, DOE staff indicate that the only reading-related endorsement in Virginia is for a reading specialist, who serves a different role than a literacy coach. Thus, some individuals may not have the skills needed to be effective literacy coaches. The research shows that literacy coaches who undergo rigorous training for their role are more likely have positive impacts. Further, even strong literacy coaches require ongoing training and support to maintain their effectiveness.

Although the concerns above, if not addressed, can lessen the effectiveness of literacy coaches, the research does support their role in providing ongoing professional development for teachers. According to the NRTAC, "A positive and significant relationship between coached teachers and student achievement gains appears promising in initial research studies." Bean also suggests that the research of the past few decades provides evidence that coaching does have much to contribute to teacher growth and learning. Likewise, many school staff think that literacy coaches can be very important, particularly in lower-performing divisions and schools. The case study below from an assistant principal at one of Virginia's elementary schools provides an example.

Case Study: One Assistant Principal's Support of Literacy Coaches

An assistant principal in one of Virginia's lower performing school divisions in 2010, who was also a former literacy coach, explained the importance of literacy coaches. Staff in this school division, including teachers, indicated that the division generally does a good job of providing professional development in reading for early elementary teachers. Given this, JLARC staff asked why third grade students in this division continue to struggle in reading, even more so than would be predicted for this division. The assistant principal explained that receiving training is one thing, but implementation of strategies and best practices is another. Having a literacy coach whose primary job is to be on-site, monitor professional development and conduct follow-up, and model good reading instruction for teachers is essential. According to the assistant principal, even less effective teachers can move forward in improving their reading instruction with the proper support. The assistant principal indicated that across the division, access to the form of support provided by literacy coaches was limited. She stated her belief that test scores would soar if teachers had better access to literacy coaches because they would not need to wait to get the assistance they need.

Availability of Literacy Coaches in Virginia. Despite the benefit literacy coaches could have in improving reading performance, only one-third of divisions in Virginia reported having staff devoted exclusively to this role. (A number of divisions reported having reading specialists who also acted as literacy coaches. However, based on research showing that literacy coaches who spent the most time working directly with teachers had the greatest positive effect, only those positions dedicated solely to literacy coaching are included in this discussion.) Lower performing divisions were as likely to have literacy coaches as higher performing divisions. However, for those divisions that have literacy coaches, their availability appears to be greater in higher performing divisions.

Table 27 shows the availability of literacy coaches for the 2010-2011 school year in those school divisions that have them. For the top third of divisions (based on performance), 75 percent of divisions reported that every elementary school had access to a coach, and in half of those divisions, every school had at least one coach solely dedicated to it. Only 25 percent of these divisions reported that some schools did not have access to literacy coaches. This compares to all other divisions in which over half of the divisions reported that some schools did not have access to a coach.

Table 27: Availability of Literacy Coaches in Divisions That Have Them (2010-2011 School Year)

	Top Third of Divisions Based on Performance[a]	All Other Divisions
Every elementary school had at least one literacy coach solely dedicated to that school	38%	21%
Literacy coaches covered multiple elementary schools, but every school had access to a literacy coach	38	25
Some schools had access to a literacy coach and some did not	25	54

[a] Division performance is based on their actual third grade reading SOL pass rate compared to their predicted pass rate.

Source: JLARC staff survey of school divisions, spring 2011.

Based on the potential for literacy coaches to improve early reading instruction in Virginia, Chapter 7 includes options to increase the number of coaches in Virginia's schools. However, due to the research showing that the definition and training of coaches can impact their effectiveness, the General Assembly may wish to direct DOE to establish a definition for literacy coaches, including guidelines for how their time should be allocated. In addition, the General Assembly may wish to direct DOE to review whether an additional endorsement or credential is needed for literacy coaches. A new endorsement could be established for this position, or requirements for the existing reading specialist endorsement could be amended to ensure that literacy coaching skills are covered by the endorsement. An alternative could also be to develop a credential that could be earned in addition the reading specialist endorsement for individuals who want to be a literacy coach. Because a sizeable number of divisions already make use of literacy coaches, these actions appear needed regardless of whether the General Assembly adopts an initiative to increase the number of literacy coaches in the State.

Recommendation (4). The General Assembly may wish to direct the Department of Education to establish a definition for literacy coaches, including guidelines on how their time should be allocated for various coaching activities. The General Assembly may also wish to direct the Department of Education to establish a credential or endorsement for literacy coaches, or consider amending the higher education regulations leading to a reading specialist endorsement, to ensure that literacy coaches have adequate training and skills to maximize their effectiveness.

Reading Specialists Work With Struggling Students

The role of a reading specialist also varies depending on how the position is defined. The International Reading Association (IRA) indicates that a reading specialist can be defined as a teacher of students experiencing reading difficulties, as a literacy coach, or as a supervisor or coordinator of literacy. In *Schools That Work,* Allington and Cunningham indicate that the main difference between a literacy coach and a reading specialist is the amount of time spent providing instruction to struggling readers versus working with teachers, and that reading specialists tend to spend most of their time providing supplementary reading instruction to students. For this study, reading specialists are defined as staff members other than the classroom teachers who work directly with children to improve their reading skills.

Reading specialists support the classroom teacher by providing additional instruction to students for whom the classroom program alone is not enough for them to be successful or experience progress with reading. Such specialists have advanced preparation and credentials in early literacy and how to assist struggling readers in particular. For example, to receive a reading specialist endorsement in Virginia, an individual must have completed an approved master's degree program in reading specialist preparation. Instruction from reading specialists may take place in the classroom or students may be receive supplemental instruction outside of the classroom. Reading specialists also assess and diagnose reading difficulties.

Research has supported the effectiveness of reading specialists in achieving increased reading success, and the need to have in-school specialists with specialized training related to addressing reading difficulties. For example, research conducted in the mid-1990s showed that when no instructional support for teachers exists, there appears to be an over-referral and inappropriate placement of children who have reading problems into special education programs. This is likely because, without support, teachers may feel overwhelmed with the range of reading abilities and achievement in their classroom.

Reading specialists are widely used by Virginia's school divisions and are supported by the *Code of Virginia*. Section 22.1-253.13:12.G of the *Code* (which provides the instructional, administrative, and support personnel requirements of the Standards of Quality) states:

> In addition to the full-time equivalent positions required elsewhere in this section, each local school board shall employ the following reading specialists in elementary schools,

one full-time in each elementary school at the discretion of the local school board.

This requirement is somewhat ambiguous because, unlike other SOQ staffing requirements, the reading specialist requirement includes the clause "at the discretion of the local school board." In addition, State funding is not specifically provided for this SOQ requirement. However, the *Code* indicates that school divisions may use Early Reading Intervention Initiative funds for the provision of reading intervention services.

The vast majority (92 percent) of school divisions in Virginia responding to a JLARC staff survey reported having reading specialists to assist students in kindergarten through third grade. Table 28 shows that, for those school divisions that have reading specialists, most elementary schools have at least one specialist solely dedicated to their school. Nearly 40 percent of divisions said that at least some of their reading specialists also act as a literacy coach.

Table 28: Availability of Reading Specialists in School Divisions That Have Them (2010-2011 School Year)

	Percent of Divisions
Every elementary school had at least one reading specialist solely dedicated to that school	84%
Some elementary schools had access to a reading specialist and some did not	7
Reading specialists covered multiple elementary schools, but every elementary school had access to a reading specialist	9

Source: JLARC staff survey of school divisions, spring 2011.

The average ratio of students to reading specialists for kindergarten through third grade ranged from 215 students to 219 students over the past three years, although this ratio was somewhat less in lower performing school divisions (meaning that each reading specialist served fewer students in these divisions). This may be because lower performing divisions realized that they have a greater need for reading specialists. Also, lower performing divisions may have access to additional funding sources that can be used for reading specialists, such as federal Title 1 funds and State school improvement funds.

Additional Staff in the Classroom and Reduced Class Size Support the Classroom Environment and Reading Program

Another means of supporting classroom teachers and bolstering the effectiveness of a classroom reading program is having addi-

tional adults in the classroom to assist during the reading block and keeping class sizes small. This was a recurring theme voiced in visits to school divisions across the State and was particularly indicated by classroom teachers. Those teachers who had additional staff available expressed the value of such support, and those who did not have additional staff to assist indicated their desire for such support. Not surprisingly, teachers also indicated that smaller class sizes kept the reading block more manageable. Ideal class sizes were not provided, but in general, teachers with class sizes of approximately 20 students or fewer had a much easier time keeping students engaged and on task throughout the reading block.

There are many ways in which schools bring additional staff into the classroom during the reading block. Some schools have special education teachers, Title 1 teachers, or tutors paid with EIRI funds that assist classroom teachers during the reading block. In other schools, the reading specialist assists classes during the block, and some schools have retired teachers who work for the school on a part-time basis and provide much needed assistance during the classroom reading block. The two Virginia school divisions that most outperformed their predicted scores, Martinsville and Patrick County, both indicated that having additional staff in the classroom to assist the teacher during the reading block was a priority in their divisions.

Observations of third grade classrooms illustrated the benefit of having both additional staff in the room during the reading block and a small class size. These practices are particularly valuable during small group time because the portion of the class not working with the teacher typically works independently. Having another staff person in the room allowed multiple instructor-led small group to be held simultaneously during this time. This was particularly helpful for struggling readers or in classrooms in which students had difficulty staying on task. However, as described in the case study below, having additional staff in the classroom, as well as a smaller class size, helps during both small group and whole group time.

Case Study: Benefits of Additional Classroom Support and Small Class Sizes

A classroom in Patrick County, the highest achieving division in the State on the 2010 third grade reading SOL test, illustrates the benefits of additional classroom support and small class size. At this school, one teacher was responsible for all third grade language arts, so the two third grade classrooms rotated into her classroom during the reading block. The teacher co-taught reading with a Title I teacher, and the co-teaching between the two was very seamless. The first class in the reading block had 11 students, and the se-

cond class had eight students. The combination of small class sizes and having two teachers in the room helped to keep nearly all children on task nearly the entire time. Throughout the reading block, at most one child was off task at any given time, and in many cases all children were on task. It also helped that the teachers were highly skilled in how to teach reading and frequently used techniques such as coaching, modeling, and asking high-level comprehension questions.

As described in the case study, having an additional staff person highly trained in how to teach reading to assist the teacher would be most ideal. However, even a volunteer or another teacher who has received some early literacy training appeared to be helpful. Either way, with additional support in the classroom, students appeared to stay on task and receive more individualized attention, thereby maximizing their learning experience.

Chapter 6

Key Strategies and Best Practices for Increasing Reading Proficiency of Struggling Readers

In Summary

There is widespread agreement that the best strategy for struggling readers is early identification and supplemental instruction for the specific difficulties these students may have in acquiring the basic skills necessary for reading. One way to implement this strategy is with a Response to Intervention (RtI) approach, which several school divisions in Virginia have used on a pilot basis. Categories of students who were more likely on average to be struggling readers included (1) students with a disability that requires special education services; (2) students with a Limited English Proficient status; (3) economically disadvantaged students; and (4) students from single-parent households who may need more parental involvement in helping them learn to read. Strategies and interventions for students with disabilities and for students with limited English proficiency take the form of an RtI approach, although the specific difficulties being addressed may differ. Four steps for closing the achievement gap between economically disadvantaged students and those who are more economically advantaged are discussed in the chapter. Strategies used by Virginia school divisions to encourage greater parental involvement are also discussed.

The mandate for this study directs JLARC to "determine strategies to increase the number of third graders who pass the third grade reading test." High quality classroom instruction that is differentiated according to student need and offered in a positive and supportive environment is the first step in preventing reading difficulties. Chapters 4 and 5 have discussed in more detail what this classroom instruction may entail. The next step in assisting struggling readers who may need extra instruction beyond what is provided in the classroom is to identify the help they need to master the skills necessary to learn to read. The extra help needed is likely to entail instruction that is more explicit, intense, and supportive than what is normally provided in the classroom. Strategies that have been reported to be effective in helping specific groups of struggling readers experience progress with reading are also discussed.

Response to Intervention (RtI)

The Virginia Department of Education defines RtI as "the practice of providing high-quality instruction/intervention matched to student needs established through data, and using learning rate over time and level of performance to inform educational decisions. It is a comprehensive, multi-tiered approach to enable early identification and intervention for students at academic or behavioral risk."

RESPONSE TO INTERVENTION IS AN OVERALL STRATEGY TO DEAL WITH READING DIFFICULTIES

Some fundamental skills are essential to become proficient in reading. The skills identified by the National Reading Panel and other experts on reading are discussed in Chapter 4, and include phonemic awareness, phonics, fluency, vocabulary, text comprehension, and writing. Consideration of these fundamental skills and

earlier skills assessment has led to a major re-thinking and restructuring of the delivery of general and special education services to all children, including struggling readers.

Critical Skills for Learning to Read

As discussed in Chapter 4, the National Reading Panel was created by the U.S. Congress in 1997 to conduct a study of the critical skills for learning to read. In its 2000 report, the panel focused on skills that are essential to learn to read. Mastery of these skills often occurs in sequence – phonemic awareness and phonics come before fluency and vocabulary, which often come prior to text comprehension. In fact, reading researcher Joseph K. Torgesen has said that reading difficulties often stem from problems in word identification skills.

> When asked to read grade-level text, the typical poor reader in third or fourth grade will show two kinds of word-level reading difficulties. First, when they encounter a word they are not familiar with they tend to…produce a high rate of word-level errors in their reading. Their phonemic analysis skills, or ability to use "phonics" to assist in the word identification process is usually severely impaired…Second, most children who are having difficulty learning to read encounter many more words in grade-level text that they cannot read "by sight" than do average readers. Compared with children of the same age who are learning to read normally, the number of words that children with reading problems can recognize fluently and easily as "sight words" is usually quite limited.

As the passage indicates, if a reader has problems mastering phonemic awareness and phonics skills (which, when combined, are called "alphabetics"), he or she will have problems with fluency and vocabulary in the future, and text comprehension will ultimately suffer.

Key Elements of Instruction for Struggling Readers

As Torgesen argues, a key change in the way reading is taught to all children must involve allocation of resources for early identification and supplemental instruction for students who appear to be struggling with the basic skills necessary for reading. The costs of waiting until mid-elementary school to identify those children in need of special instruction in reading are greater than those associated with earlier detection. Further, the reading instruction provided to struggling readers should be more explicit, more intense, and more supportive than can be provided in a classroom of 20 to 30 children.

Instruction for Struggling Readers Must Be More Explicit. Children who enter first grade with weaknesses in knowledge about letters, letter-sound correspondences, and phonemic awareness require explicit and systematic instruction to help them learn how to decode print. One study stated, "first graders who are at risk for failure in learning to read do not discover what teachers leave unsaid about the complexities of word learning. As a result, it is important to teach them procedures for learning words."

Instruction for Struggling Readers Must Be More Intense. More intense instruction means that it must contain more teaching/learning opportunities per day in addition to classroom instruction. If struggling readers do not receive more teaching/learning opportunities per day than other children, they will acquire reading skills more slowly. Torgesen states:

> Another factor that underlines the need for more intensive instruction is the fact that children who come to school with weaknesses in talent for learning to read learn more slowly than other children and will thus require more repetition in order to solidly establish critical word reading and comprehension skills. Although children whose risk status is determined primarily by lack of instructional opportunities in the preschool environment may learn at average rates, they have much more to learn than children who come to school with typical levels of preparation.

Instruction for Struggling Readers Must Be More Supportive. The need of struggling readers for more positive emotional support in the form of encouragement, feedback, and positive reinforcement is widely understood. However, their potential need for more cognitive support in the form of carefully scaffolded instruction is less widely appreciated.

According to Torgesen, instruction for struggling readers should involve two types of scaffolding. One type of scaffolding involves careful sequencing so that skills build very gradually: the child is always systematically taught and practiced on the skills required for any task the child is asked to do. Another type of scaffolding involves teacher-student dialog that directly shows the child what kind of processing or thinking needs to be done in order to complete the task successfully.

The latter type of scaffolding instruction usually involves four elements: (1) the student is presented with a task such as reading or spelling a word (for example, the student tries to spell the word "flat"); (2) the student makes a response that is incorrect in some way, or indicates that he/she does not know how to proceed (the

student spells the word as "fat" instead of "flat"); (3) the teacher asks a question that focuses the child's attention on a first step in the solution process, or that draws attention to a required piece of information ("If you read that word, what does it say?" Child responds "fat". The teacher asks "So, what do you need to add to make it say flat? No answer. "When you say *flat,* what do you hear coming right after the beginning sound /f/?"); and (4) another response from the child ("I hear the /l/ sound."). This kind of interaction between teacher and student continues until the child had been led to successfully accomplish the task. The point of this type of instructional interaction is that the child is led to discover the information or strategies that are critical to accomplishing the task, rather than simply being told what to do.

Early Detection and Prevention Strategies Through Response to Intervention (RtI) Systems

Response to Intervention (RtI) is a comprehensive early detection and prevention strategy that school divisions in Virginia are now using, to varying degrees. It identifies struggling readers through universal screening of all students, and it attempts to assist the struggling readers with evidence-based interventions before they fall farther behind. RtI also provides a way to identify which children may need special education services.

The RtI method came about as a 2004 revision of the federal Individuals with Disabilities Education Improvement Act (IDEA 2004). Until that time, the law required educators to use a "discrepancy model," often relying on a 1.5 to 2.0 grade level difference between actual and expected student performance. The discrepancy model approach was called the "wait to fail" approach for accessing additional assistance in reading, in which students would not be officially diagnosed with a specific learning disability until grade two or three.

In contrast, IDEA 2004 allows school divisions to use as much as 15 percent of their special education money to fund early detection and intervention activities. Using an RtI strategy, schools would screen students at least once a year to identify those who potentially will have difficulties with learning to read. Those students are provided with more intensive reading interventions. Student responses to the interventions are then measured to determine whether they have made adequate progress and either (1) no longer need the intervention, (2) continue to need some intervention, or (3) need even more intensive intervention.

According to a practice guide published by the Institute of Education Sciences (IES) of the U.S. Department of Education, the levels of intervention are referred to as "tiers." Analysis of student data

is critical in all tiers. Within a three-tier RtI model, each tier is defined by specific characteristics:

- Tier 1 instruction is generally defined as reading instruction provided to all students in a class. Good Tier 1 instruction that is differentiated according to student need is the first step in preventing difficulties.
- Tier 2 interventions are provided only to students who demonstrate problems based on screening measures or weak progress from regular classroom instruction. In addition to regular general classroom instruction, Tier 2 students receive supplemental, small group reading instruction aimed at building up foundational reading skills.
- Tier 3 interventions are provided to students who do not progress after a reasonable amount of time with the tier 2 intervention and require more intensive assistance. Tier 3 usually entails one-on-one tutoring with a mix of instructional interventions. Ongoing analysis of student performance data is critical in tier 3. Systematically collected data are used to identify successes and failures in instruction for individual students. If students still experience difficulty after receiving intensive services, they are evaluated for possible special education services.

Though a relatively new concept, RtI and multi-tier interventions are becoming increasingly common in elementary schools across Virginia. However, these small-group or one-on-one interventions are costly because they generally require more staff time. The effects of limited fiscal resources on staff time available for these kinds of interventions is a concern that was frequently expressed to JLARC staff during site visits to elementary schools across Virginia. However, the RtI approach allows flexibility in reallocating money and staff scheduling across the tiers that may mitigate the need for additional resources. Also, some divisions have found that the RtI approach can achieve savings, for example, by decreasing the need for more intensive interventions later.

Interventions Used in Virginia School Divisions

For an RtI approach to work correctly, interventions must take place. According to the JLARC staff survey of school divisions, interventions appear to take place in schools throughout Virginia. However, whether all interventions that are needed currently take place is not as clear. About one-third of the respondents indicated they were very satisfied that all students in kindergarten through third grade who need reading intervention in their school division receive it. The remaining two-thirds indicated that they were somewhat satisfied or not satisfied and that improvement was

needed. In addition, about 90 percent of the respondents said that their school division is not able to provide one-on-one intervention to all third grade students who need it.

Exhibit 2 lists the commercial intervention programs reading coordinators in the school divisions across Virginia reported using. Exhibit 2 (as well as subsequent exhibits) is not intended to suggest that interventions should be a commercial program. However, some reading coordinators in Virginia school divisions reported commercial programs as being effective in their division. The IES What Works Clearinghouse (WWC) has rated some of these commercial intervention programs. The WWC reviewed intervention programs that were reviewed by studies with the most rigorous research designs, and that met WWC evidence standards. They examined about 900 studies of 171 early reading intervention programs that qualified for their review. Of these, about 50 studies of 26 programs met the WWC evidence screens. Consequently, WWC rated the effects of seven of the 33 intervention programs Virginia reading coordinators reported using. However, WWC has not rated most of the interventions because there were no studies of them

Exhibit 2: Commercial Reading Intervention Programs Reported as Effective by Virginia School Divisions

Book Buddies	My Sidewalks
Corrective Reading[a]	Open Court Imagine It Intervention
Early Intervention in Reading[b]	Peer Assisted Learning Strategies[e]
Earobics[c]	PM Readers
EdMark	QuickReads
Fast ForWord[d]	Read Naturally[f]
Fundations	Reading Mastery
Grow into Reading	Reading Recovery[g]
Harcourt Intervention	Reading Sidewalk
Intervention by Design	Reading Street
iStation	SOAR to Success
Leveled Literacy Intervention (Fountas and Pinnell)	SRA Horizons
Literacy by Design	SRA Reading
Making Connections	SuccessMaker
McKenna and Walpole Differentiated Reading	Unique Reader
Modern Curriculum Press Ready Readers	Words Their Way

Rated by the U.S. Department of Education's Institute of Education Sciences as having
[a] potentially positive effects on alphabetics and fluency, no discernable effects on comprehension.
[b] potentially positive effects on alphabetics and comprehension.
[c] a strong positive effect on alphabetics, no discernable effects on fluency.
[d] positive effects on alphabetics, and mixed effects on comprehension.
[e] potentially positive effects on alphabetics, fluency, and comprehension.
[f] no discernable effects on fluency and comprehension.
[g] strong positive effects on alphabetics and general reading achievement, and potentially positive effects on fluency and comprehension.

Source: JLARC staff survey of school divisions; U.S. Department of Education, Institute of Education Sciences (2007). *What Works Clearinghouse Topic Report; Beginning Reading.* Washington, D.C.: Institute of Education Sciences, U.S. Department of Education. pp 1-8. Retrieved from http://ies.ed.gov/ncee/wwc/reports/topicarea.aspx?tid=01.

that met the WWC's standards of evidence—not because the interventions had no effects.

The Virginia Board of Education has published a list of recommended instructional interventions that have proven to be successful in working with low achieving students. Exhibit 3 shows these interventions for reading at grades K-3, along with WWC ratings for some of them. The board indicates that instructional intervention programs must meet four criteria to be on their list of recommended instructional interventions:

- scientifically-based evidence of effectiveness that has been demonstrated in Virginia,
- implementation and capacity for technical assistance,
- replicability, and
- correlation with or adaptability to the Virginia Standards of Learning (in English).

Exhibit 3: Intervention Programs Proven to Be Successful With Low-Achieving Students (Virginia Board of Education)

Comprehensive:
Houghton Mifflin Reading: The Nation's Choice
Open Court
Reading Mastery Plus
Success for All (New Version)[a]
Voyager Universal Literacy System[b]

Supplemental:
Academy of Reading
Breakthrough to Literacy
Classworks
Compass Learning Odyssey Reading
Destination Reading
Early Success
Earobicsc
Failure Free Reading[d]

Supplemental *(continued)*:
Fast ForWord Products[e]
Making Meaning
Mondo Publishing: *Bookshop*
My Sidewalks on Reading Street and Early Intervention Reading
Plaid Phonics
QuickReads
Read Naturally[f]
Read Well
Ready Readers
Saxon Phonics and Spelling
Sing, Spell, and Write
Soar to Success
SuccessMaker Enterprise
Waterford Early Reading Program[g]

Rated by the U.S. Department of Education's Institute of Education Sciences as having
[a] positive effects on alphabetics , mixed effects on comprehension, and generally positive effects on general reading achievement.
[b] potentially positive effects on alphabetics and potentially negative effects on comprehension.
[c] a strong positive effect on alphabetics, no discernable effects on fluency.
[d] no discernable effects on alphabetics and fluency, and potentially positive effects on comprehension.
[e] positive effects on alphabetics and mixed effects on comprehension.
[f] no discernable effects on alphabetics and comprehension.
[g] potentially positive effects on alphabetics and no discernable effects on comprehension.

Source: Virginia Board of Education (2011). *Instructional Interventions That Have Proven to Be Successful with Low-Achieving Students.* Richmond, VA: Virginia Department of Education; U.S. Department of Education, Institute of Education Sciences. (2007). *What Works Clearinghouse Topic Report; Beginning Reading.* Washington, D.C.: Institute of Education Sciences, U.S. Department of Education. pp 1-8. Retrieved from http://ies.ed.gov/ncee/wwc/reports/topicarea.aspx?tid=01.

Other studies have indicated that students receiving some type of intervention generally scored higher on reading measures compared to students receiving no intervention. For example, one study comparing two types of interventions side by side (one based on behavioral theory and the other based on cognitive theory) found the two equally effective in improving reading measures compared to students receiving only enhanced classroom instruction. This result implies that using an intervention—of any type—could improve students' reading test scores.

It must be mentioned that while the majority of students for whom these interventions are provided benefitted from them, not all students would respond positively. Even with interventions provided by well-trained teachers, studies achieved a success rate of about 90 percent of participating students reaching grade-level reading standards. These studies typically select students who are performing in the bottom 20 percent of the school population on reading assessments (excluding students with severe cognitive disabilities). Thus, students not responding well to the interventions comprise about two percent of the entire student population, and are at risk of later being identified with disabilities.

KEY STRATEGIES AND BEST PRACTICES FOR DIFFERENT TYPES OF STRUGGLING READERS

Different types of students may have different kinds of problems with learning to read. Chapter 3 described a regression analysis performed by JLARC staff to identify the factors that are most closely associated with test scores on the third grade SOL reading test. Appendix C explains in more detail how these key variables are represented and some of the more technical details of the regression analysis.

The analysis indicated that students were more likely to perform poorly on reading tests if they

- have a disability that requires special education services,
- have Limited English Proficient (LEP) status,
- are economically disadvantaged students, and
- are black or Hispanic.

Chapter 3 discussed how race may be a proxy variable for family structure and parental involvement in the regression model. As a result, the last category of struggling readers listed refers to family structure and parental support, rather than to race itself.

Being male was not included as a separate category, although the regression coefficient for gender indicates that on average females tended to score about eight points higher than males on the SOL reading test, all other things equal. However, an eight point difference is relatively small, compared to the average differences in the other four groups.

Disabled Students

The RtI approach provides a strategy to identify students with a disability that requires special education services. Overall, the field of special education appears to be experiencing a fundamental reconfiguration with general education to meet the needs of struggling readers through RtI models. In the research literature that was published prior to 2000 and the widespread use of RtI models, many interventions that were reported as successfully improving the reading skills of disabled students were also reported as successfully improving the reading skills of non-disabled struggling readers. For example, the National Reading Panel found that many studies showed that both disabled and non-disabled struggling readers benefitted from similar phonemic awareness and phonics instructional programs and techniques.

Further, the revised language in IDEA 2004 changed, in part, the way in which struggling readers can be diagnosed as needing special education services. The new language allowed the use of an alternative means of identifying a disability, namely through an RtI approach of using multiple tiers of intervention. The RtI approach is relatively new and still evolving, and there has been some confusion about how it may shift from a general educational instructional procedure to a special education identification procedure. In other words, the RtI approach was initially conceptualized to apply to all students, and has focused more on the three basic problems that may interfere with struggling students' reading skills:

- lack of understanding and use of phonological awareness and the alphabetic principle,
- insufficient comprehension strategies, and
- lack of motivation to read.

Concerns have been raised regarding how the RtI approach can be extended so that it does not under- or over-identify the number of students eligible for special education services, and how it will merge with existing special education policies and procedures.

Reading coordinators were also asked in the JLARC staff survey what particularly effective or innovative methods, strategies, programs, or materials their school divisions used to assist students

with disabilities with reading. Their responses are summarized in Exhibit 4, along with the ratings the WWC gave to some of these programs.

Exhibit 4: Commercial Intervention Programs Reported as Effective for Disabled Students by Virginia School Divisions

Cognitive Reading Strategies	Peer Assisted Learning Strategies [e]
Corrective Reading[a]	Phono-Graphix
Early Intervention in Reading[b]	Read 180
EdMark	Read Naturally[f]
Failure Free Reading[c]	Reading A-Z
Fundations	Reading Horizons
Harcourt Intervention	Reading Mastery
Herman Reading Method	Recipe for Reading
Houghton Mifflin Reading	SOAR to Success
Language for Learning	SpellRead[g]
Leveled Literacy Intervention by Fountas and Pinnell	SRA Systems
Lindamood Bell Phoneme Sequencing[d]	Start to Finish
Merrill Reading Program	SuccessMaker
My Reading Coach	Wilson Reading System[h]
Orton Gillingham Reading	

Rated by the U.S. Department of Education's Institute of Education Sciences as having
[a] potentially positive effects on alphabetics and fluency, no discernable effects on comprehension.
[b] potentially positive effects on alphabetics and comprehension.
[c] no discernable effects on alphabetics and fluency, and potentially positive effects on comprehension.
[d] potentially positive effects on alphabetics and no discernable effects on comprehension.
[e] potentially positive effects on alphabetics, fluency, and comprehension.
[f] no discernable effects on fluency and comprehension.
[g] positive effects on alphabetics and potentially positive effects on fluency and comprehension.
[h] potentially positive effects on alphabetics and no discernable effects on fluency and comprehension.

Source: JLARC staff survey of school divisions; U.S. Department of Education, Institute of Education Sciences. (2007). *What Works Clearinghouse Topic Report; Beginning Reading.* Washington, D.C.: Institute of Education Sciences, U.S. Department of Education. pp 1-8. Retrieved from http://ies.ed.gov/ncee/wwc/reports/topicarea.aspx?tid=01.

There are many potential pitfalls to RtI programs. In *Schools that Work: Where All Children Read and Write*, Allington and Cunningham outline several conditions that are necessary for educational programs for pupils with disabilities to be successful:

- Regular education personnel must become collaboratively involved in identification, instructional adaptation, individualized education plan (IEP) development, and the monitoring of the learning progress.
- Special education personnel must become collaboratively involved with regular education personnel and develop a close familiarity with regular education goals and materials.
- The educational focus for pupils with disabilities must become successful on achieving state academic standards in the regular classroom.

- Special education must be viewed as a short-term intervention in most cases, and some near-term end point must be identified when a student will no longer need special education support.
- Special education programs cannot be administered from afar. Each school must have the flexibility to design appropriate interventions without much regard to past practices or some standard program.
- Accountability for academic acceleration of the academic growth of students with disabilities must be implemented.

English Language Learners

English Language Learners

English Language Learners is a term used by the U.S. Department of Education to mean students who are learning English as a second language.

In 2002, the IES created the National Literacy Panel on Language-Minority Children and Youth. The panel, which consisted of experts in second-language development, cognitive development, curriculum and instruction, and methodology, reviewed the quantitative and qualitative research on the development of literacy in language-minority students. The major findings of the panel include the following:

- Instruction that provides substantial coverage in the key components of reading—phoneme awareness, phonics, fluency, vocabulary, and text comprehension—has clear benefits for language-minority students.
- Instruction in the key components of reading is necessary—but not sufficient—for teaching language-minority students to read and write proficiently in English. Oral proficiency in English is critical as well—but student performance suggests that it is often overlooked in instruction. The basic sequencing in teaching should require greater attention to word-level skills early in the process and more direct and ambitious attention to reading comprehension later on. Vocabulary and background knowledge should be targeted intensively throughout the entire sequence.
- Oral proficiency and literacy in the first language can be used to facilitate literacy development in English. Studies that compare bilingual instruction with English-only instruction demonstrated that language-minority students instructed in their native language as well as in English perform better, on average, on measures of English reading proficiency than language-minority students instructed only in English.
- Individual differences contribute significantly to English literacy development. Studies suggest that underlying individual processing deficits in the skills required for reading, as

opposed to language-minority status, are the primary issue for students experiencing word-level difficulties.

- Most assessments do a poor job of gauging individual strengths and weaknesses.
- There is surprisingly little evidence for the impact of certain social and cultural variables (such as immigration status and generation, or discourse/interactional characteristics, or language status and prestige) on literacy achievement or development of English language learners.
- However, home language experiences can have a positive impact on literacy achievement.

Subsequently, an IES practice guide recommended a five-step strategy for English language learners who may need extra help in learning to read. It reflects many of the findings of the National Literacy Panel on Language-Minority Children and Youth. For example, it emphasizes the five basic skills needed to learn to read, and early detection of students who may have difficulties with them. It also reflects the notion that English language learners may need more help in developing their vocabularies of English words. The five steps are:

- Conduct formative assessments with English learners using English language measures of phonological processing, letter knowledge, and word and text reading. Use these data to identify English learners who required additional instructional support and to monitor their reading progress over time.
- Provide focused, intensive small-group interventions for English learners determined to be at-risk of reading problems. Although the amount of time in this small-group instruction and the intensity of this instruction should reflect the degree of risk, determined by reading assessment data and other indicators, the interventions should include the five core reading elements (phonological awareness, phonics, reading fluency, vocabulary, and comprehension). Explicit, direct instruction should be the primary means of instructional delivery.
- Provide high-quality vocabulary instruction throughout the day. Teach essential content words in depth. In addition, use instructional time to address the meanings of common words, phrases, and expressions not yet learned.
- Ensure that the development of formal or academic English is a key instructional goal for English learners, beginning in the primary grades. Provide curricula and supplemental

curricula to accompany core reading and mathematics series to support this goal. Accompany this with relevant training and professional development.

- Ensure that teachers of English learners devote approximately 90 minutes a week to instructional activities in which pairs of students at different ability levels or different English language proficiencies work together on academic tasks in a structured fashion. These activities should practice and extend material already taught.

Examples of the intervention programs for struggling English learners that are mentioned in the IES practice guide are *Enhanced Proactive Reading*, *Read Well*, and *SRA Reading Mastery/SRA Corrective Reading*. The practice guide characterizes these programs as having much in common. They form a central aspect of daily reading instruction and take between 30 and 50 minutes to implement each day. Program implementation involves intensive small-group instruction focusing on five core areas of reading: phonological awareness, letter knowledge, word recognition, fluency, and comprehension. Commercial intervention programs reported to be effective for English language learners by Virginia school divisions, and the available WWC ratings, are shown in Exhibit 5.

Exhibit 5: Commercial Intervention Programs Reported as Effective for English Language Learners by Virginia School Divisions

Boost!	Language for Learning
Brain Pop	Leveled Literacy Intervention
Breakthrough to Literacy	Moving into English
Early Intervention in Reading[a]	Reading A-Z
Family Literacy Preschool	Reading Mastery*
Fountas and Pinnell Rosetta Stone	Reading Recovery[b]
Imagine Learning English	Success Maker
Jump Start	

Rated by the U.S. Department of Education's Institute of Education Sciences as having:
[a] potentially positive effects on alphabetics and comprehension.
[b] strong positive effects on alphabetics and general reading achievement, and potentially positive effects on fluency and comprehension.

* PALS Office staff have noted that *Reading Mastery* is known for its emphasis on decoding (alphabetics), not on vocabulary or the development of more complex sentence structures.

Source: JLARC staff survey of school divisions; U.S. Department of Education, Institute of Education Sciences. (2007). *What Works Clearinghouse Topic Report; Beginning Reading* and *English Language Learners.* Washington, D.C.: Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc/reports/topicarea.aspx?tid=01 and http://ies.ed.gov/ncee/wwc/reports/topicarea.aspx?tid=10.

Economically Disadvantaged Students

Economically disadvantaged students are known to be affected by several factors that can influence their reading test scores. First,

they tend to come to kindergarten less prepared for schoolwork than their peers who are not economically disadvantaged. Often, they do not have preschool experiences which can contribute to having weaker alphabetic skills. Consequently, they are behind their peers in phonemic awareness and phonics skills, which results in word recognition being more difficult for them.

Other factors related to a student's economic status that may influence their reading performance are having a very young, single parent with a low educational attainment level (the effects of coming from single parent households is discussed further in the next section); unemployment of parents; abuse and neglect; substance abuse; dangerous neighborhood and school environments; homelessness; mobility; and exposure to inadequate or inappropriate educational experiences. Students spend substantially more of their waking hours outside of school than in the classroom, so changes outside of schools can greatly help. However, countless studies have shown that what schools do also matters greatly. As a result, the focus of this discussion is more on what has been shown to work within the education system, rather than on changes outside of the education system.

The director of the Education Trust has outlined four ways that school systems serving economically disadvantaged students can reduce the gap in achievement:

- Develop clear standards for what students should learn at benchmark grade levels.
- Design a challenging curriculum for all students that is aligned with the standards.
- Provide extra help to all students who need it.
- Have more highly-qualified teachers work with struggling readers.

Views vary as to the impact upon the quality of education which has stemmed from standards-based reforms; however, through the SOLs, the Commonwealth appears to have accomplished the first objective cited by the director. In addition, Virginia school divisions have worked toward accomplishing the second objective. The State could accomplish the third objective by making sure the resources needed for a well-run RtI process for all students are available, recognizing that school divisions with more economically disadvantaged students would probably need more interventions (and that local ability to pay may be less).

The fourth objective would require a major departure from how, up until now at least, it has been primarily left up to local school divi-

sions to hire their teachers. Because local school divisions with more economically disadvantaged students tend to have a lower ability to pay for their education costs, they also tend to have less money to pay highly-qualified teachers. The State compensates for this to some extent by using an ability to pay measure, the composite index, in funding education. Nonetheless, school divisions with struggling students and few community amenities are not in an optimal position to attract teachers.

It is conceivable that some highly-qualified teachers could be attracted to some "hard-to-staff" schools based on having sufficient pay bonuses available in those schools for staff who achieve success with struggling students. The 2011 General Assembly approved a request by the Governor for $3 million to reward teachers in hard-to-staff schools based on performance. However, this pilot program is described as a performance-pay pilot, suggesting that it is more geared toward advancing the use of merit pay for teachers than to specifically address the problems faced in hard-to-staff schools.

Children Who Come From Single-Parent Households May Need More Parental Involvement in Helping Them Learn to Read

Educators believe that parents can help their children learn to read and can be involved in their child's literacy development through school-based involvement, home-school conferencing, and home-based involvement.

Much has been written about how family structure relates to parental involvement with children's school performance. One area of general consensus among educators is that parents can help their children learn to read and can be involved in their child's literacy development in at least three ways: school-based involvement, home-school conferencing, and home-based involvement.

School-based involvement includes various parental activities and behaviors occurring in their children's school environment. Examples of school-based activities include volunteering in the classroom, acting as a chaperone for class field trips, participating in fundraising activities in the school, or planning classroom activities with teachers.

Home-school conferencing involves communication between parents and teachers or other school staff regarding children's academic achievement, enjoyment of school, or rate of progress. Some examples of home-school conferencing activities include parents talking to a teacher about a child's areas of strength or weakness in school, attending parent-teacher conferences to discuss a child's progress and performance, scheduling meetings with school administrators in order to solve problems or to learn more about what is occurring in school, or talking with a child's teachers about classroom rules and daily class routines.

Home-based involvement entails parents actively encouraging children to engage in learning in the home setting and providing learning opportunities for their children. Some examples of home-based involvement include reviewing a child's homework, spending time working with a child on number skills or reading and writing skills, bringing home learning materials such as books or educational videos for a child, or talking to a child about the parent's love for learning and reading. Most parental involvement interventions to promote reading proficiency are focused on parent-child activities at home.

A review of 14 studies of parental-involvement interventions concluded that parents can help their children learn to read, but the effectiveness of the help varies according to the type of parent-child activities. There were three types of home-based parent involvement represented in the review: (1) parents reading to their children; (2) parents listening to their children read; and (3) parents teaching specific literacy skills (such as how to read new words) to their children with specific exercises. The review concluded that, of the three types of interventions, training parents to teach their children reading with specific exercises has the largest effect on children's reading proficiency; in contrast, having parents listen to their children read produced a moderate effect; and having parents read to their children produced a negligibly small effect.

Further, the review found that the impact of the parent interventions did not differ between children reading at a normal level and those that read below or are at-risk of reading below grade level. Therefore, all children, not just struggling readers, would benefit from greater parental involvement as they learn to read.

Single parents who are working may have less time to spend at home and with their children, compared to parents in two-parent households. Consequently, several school divisions in Virginia have developed strategies to reach out to parents whose children's reading proficiency would especially benefit from greater parental involvement. Examples of some of these strategies were mentioned in interviews with teachers and principals during JLARC staff site visits to school divisions:

- As part of an annual routine, school teachers in one division schedule visits to the homes of at least two of their students, focusing on parents who have been less engaged with attending events at the school and the schooling of their children.
- Teachers in another school division send out e-mails to parents every day informing them about their children's schoolwork and the homework assignments for that day.

Some parents may not have access to e-mail, so teachers send assignment notebooks home with the children as well.

- A principal of a school with a student population with substantial socioeconomic challenges and low levels of parental education attainment indicated that a GED program is offered to parents of the students, with tuition funded for parents successfully completing the program. About a dozen parents have completed the program to date, and the principal reports that these parents often volunteer to help at the school.
- In another division, schools provide workshops in the evenings to help parents learn how to read at home with their children. These events tend to have a higher turnout when schools provide dinner for the parents.
- Some school divisions address the lack of parental involvement by providing after-school reading programs. For example, one school division has an after-school reading program in which teachers tutor struggling readers.

Chapter 7

Options to Promote Third Grade Reading Performance

In Summary

Options have been identified that could potentially be implemented at both the State and local level to help improve reading performance in third grade, as well as in prior grades. Because classroom teachers are the most critical element of a successful early reading program, key options focus on providing training and support for classroom teachers. If the State were to provide additional support to improve early reading, additional resources should be focused on teachers. However, important options also have been identified for supporting effective intervention programs and maintaining an environment supportive of early literacy. The following high-priority options are recommended: (1) maintain, and whenever possible improve, training opportunities in early reading for teachers and administrators, (2) provide more support and guidance on best practices for teaching reading, (3) provide funding for literacy coaches, and (4) maintain, and if possible, expand preschool opportunities.

As discussed throughout the report, many Virginia school divisions are well on their way to implementing effective early reading programs for their elementary students. However, the findings of the study also show that there are opportunities to further improve reading performance by students in kindergarten through third grade. JLARC was directed to study ways to promote early reading proficiency and comprehension among third graders specifically. However, nearly all of the strategies and best practices identified in this report that apply to third grade also apply to kindergarten through grade two. As suggested by reading experts and school division staff, a good quality reading program needs to start in kindergarten so that students are prepared to succeed by the time they reach the third grade.

Options are available at both the State and local level for improving reading performance in kindergarten through third grade based on the research and findings in this report. Several key options focus on providing adequate training and support related to reading instruction for classroom teachers. As discussed previously, the classroom teacher is the most critical component of an early reading program. However, important options also exist for supporting effective reading intervention programs and ensuring that the overall academic environment is supportive of early literacy.

Some options are for the State, localities, or school divisions to, at a minimum, maintain the current level of effort directed toward activities that benefit early grade reading performance. This is a response to the fact that in recent years, State and locality budgets

for education have been declining. For example, State spending in 2010 for the State Standards of Quality (SOQ) -- the major State funding account for funding school division activities -- decreased from FY 2007 levels. Many localities have also experienced declines in their real estate tax base. Consequently, many school divisions have had to look for places to cut costs. Reductions in resources devoted to improve or enhance early grade reading proficiency, however, would likely be counterproductive to the goal to promote and ensure early reading proficiency and comprehension.

MAINTAIN EARLY ELEMENTARY TEACHERS WELL TRAINED IN READING INSTRUCTION

Chapter 5 discussed the importance of training and professional development in providing teachers with the tools they need to effectively teach young students to read. Providing funding for increased professional development on how to most effectively teach reading was also second on the JLARC staff survey (reported by 54 percent of divisions) as one of the top ways divisions indicated that the State could best help improve reading performance and comprehension among Virginia's third graders.

Due to the importance of training on enhancing the effectiveness of classroom teachers, school divisions are encouraged to maintain or increase training opportunities in reading instruction. This is an area which can be vulnerable to counterproductive cuts during difficult budget times. During the site visits, for example, a principal in one high-performing school division indicated that although professional development was an area in which more opportunities would be useful, the budget for it had been cut by 12 percent. It appears that additional State support for professional development may be best targeted at improving the capacity of the PALS Office to provide increased professional development and mentoring of school-level staff.

Maintain or Expand Professional Development Opportunities in Reading for Elementary Teachers—Suggested Local Responsibility

Chapter 5 discussed that well-trained teachers are more likely to implement best practices in teaching reading in their classrooms. Accordingly, school divisions are encouraged to maintain, if not improve, training opportunities for early elementary teachers related to reading instruction. Chapter 5 showed that 80 percent of school divisions statewide report having provided professional development for third grade teachers on how to teach reading. However, only 64 percent of lower performing divisions reported having provided such training. Therefore, these divisions are encouraged to place particular priority on this effort.

DOE indicates that there are several sources of federal and State funding that can be used for reading-related professional development. For example, Federal Title I and Title II funds can be used for this purpose. State school improvement and SOQ-related funds can also be used, in addition to several other State funding sources. Due to the critical importance of having teachers well trained in reading instruction, it is recommended that local school divisions place a priority on identifying and meeting professional development needs in teaching reading.

Recommendation (5). Due to the critical importance of having teachers well trained in how to teach reading, school divisions should maintain and, when possible, increase access to quality training opportunities for early elementary teachers related to reading instruction.

Provide More Support and Guidance on Best Practices and Strategies for Teaching Reading—Suggested State Responsibility

Improving the State's capacity to support school divisions in reading instruction could help address the individual and unique needs of divisions. Chapter 5 discussed that on-site, recurring, and more tailored professional development is more effective than one-time training seminars or conferences. This approach also appears to have been effective in Massachusetts, which is the only state with an average score higher than Virginia's by a statistically significant amount on the 2009 NAEP grade 4 reading assessment. Staff at the Massachusetts Department of Elementary and Secondary Education indicated that they believe one of the factors leading to their state's overall comparatively high performance in reading is training and support provided to school districts from state-supported regional assistance centers. Specialists from the centers provide on-site training and modeling in reading instruction to Massachusetts school districts.

In Virginia, this approach has been taken informally to some extent through the PALS office at the University of Virginia and DOE. However, building such support for school divisions could be more formalized. The PALS office is most suited for this role because it already appears to be the entity in the State providing the greatest level of support to school divisions on early reading instruction, has highly trained experts in early reading, and has access to detailed reading assessment data for school divisions. Moreover, school divisions appear to value the support and guidance they receive from the PALS office. When asked on the JLARC staff survey about which State programs have been most beneficial within the past five years in helping to improve third grade reading performance and comprehension, the two top responses provid-

ed by divisions were the annual EIRI/PALS Symposium and resources provided through the PALS office.

The PALS office indicated that with additional resources ranging from $380,000 to $600,000, they could provide significantly more professional development and support to school divisions in the area of reading instruction. (PALS staff indicated funds are not currently allocated in the office's budget for these types of activities.) For example, the professional development model outlined by the PALS office includes six-week courses for teachers and other instructional leaders, such as literacy coaches, that focus on various aspects of reading instruction like bridging data and instruction and conducting observations of small-group differentiated reading instruction. The courses would start with a regional, in-person kick-off with a PALS staff member, and then follow with six weeks of follow-up activities and online conversations and mentoring. In addition, the proposal includes resources for mentoring literacy coaches, teachers, and reading specialists through, among other things, online video conferencing and on-site visits, as needed. The upper end of the proposal ($600,000) includes resources for a greater level of direct mentoring of school staff and also a greater availability of professional development offerings.

It also would be useful if the PALS office could work with school divisions on ways to assess and sustain student reading motivation as students move through the elementary grades. The motivation factor could potentially be among the topics addressed through the activities stated above. In addition, the PALS office could increase awareness of assessment instruments that could be used or adapted to help identify student reading motivation levels and factors which impact motivation. Administration of such instruments is not burdensome for the division or students, as they typically can be completed in little time (one can be completed in ten minutes) and are more enjoyable for the student than the typical reading assessment. To the extent these are administered, the PALS office could maintain the data and analyze it for patterns.

If additional resources were provided for the PALS office, it would be prudent for the office to consult with DOE to help ensure that the greatest professional development needs are being met. In addition, course offerings would need to be flexible to meet the changing needs of school divisions. Staff at the PALS office indicate that their intention would be to continue developing new courses to best address the current needs of school divisions. In addition, even though it is easiest for the PALS office to support divisions that make extensive use of PALS as an assessment tool, the office would need to ensure that it can also support those divisions that choose to use other assessment instruments. The office indicated that this would not be problematic, particularly if those divisions

using alternative assessment instruments can provide the results of their assessments.

This option is not meant to exclude other universities from providing valuable support to school divisions in reading instruction. However, given the contractual agreement and working relationship between the PALS office, DOE, and school divisions, there appears to be some value in building upon an existing foundation of assessment and support in reading instruction. Also, of all the options that involve State resources, providing more support and guidance on best practices for teaching reading through the PALS office at the University of Virginia appears to be the option with lowest additional State cost that could also have a high impact on improving reading instruction in the State.

Recommendation (6). The General Assembly may wish to consider providing additional resources to the PALS office at the University of Virginia to develop additional professional development and mentoring capabilities to assist Virginia school divisions in improving their early reading programs.

PROVIDE SUPPORT FOR EARLY ELEMENTARY CLASSROOM TEACHERS IN READING INSTRUCTION

In addition to maintaining early elementary teachers that are well trained in teaching reading, providing support for these teachers is also crucial to having an effective early reading program. Increased funding to ensure that teachers have adequate access to reading professionals, in particular literacy coaches and reading specialists, can help with this endeavor. Also, ensuring that funds are available to hire paraprofessionals to assist during the reading block and maintaining small classes can also enhance the effectiveness of the classroom reading program. Of these options, targeting increased State funding for literacy coaches appears likely to have the greatest impact on improving early literacy instruction.

Fund Literacy Coaches—Suggested State and Local Responsibility

Providing funding for literacy coaches was the most frequent response of school divisions when asked for the top three ways in which the State could best help improve reading performance.

As discussed in Chapter 5, literacy coaches are an important source of support for classroom teachers through the in-class coaching and on-site professional development that they provide. A literacy coaching program could lead to significant improvements in classroom reading instruction and raise the overall quality of reading instruction across divisions. This is particularly important in divisions that have pockets of high-quality reading instruction but do not have a quality division-wide reading program. Further, providing funding for literacy coaches was the most frequent re-

sponse of school divisions on the JLARC staff survey when asked for the top three ways in which the State could best help improve reading performance and comprehension among Virginia's third graders. DOE indicates that the State and federal funding sources mentioned above that are available for professional development in reading could also be used to fund literacy coaches. However, in practice, only approximately one-third of divisions report having full-time literacy coaches in their divisions.

A literacy coaching model could be implemented in several ways. As discussed in Chapter 5, the effectiveness of a widespread literacy coaching program will depend on whether the role of literacy coach is well defined and whether literacy coaches are adequately trained. Chapter 5 includes a recommendation that DOE develop a definition and credentialing requirements to address these concerns. One option would be for the State to help fund existing literacy coaches (serving solely in this capacity) in divisions that meet the definition and credentialing requirements established by the State. Table 29 shows that if all existing literacy coaches met such standards, the State share of costs for literacy coaches would be approximately $5.0 million. This approach would allow DOE to assess the literacy coaching program as it grows incrementally to ensure that the guidelines surrounding the program are appropriate and effective.

Table 29: Estimated Cost to Fund Literacy Coaches in Virginia's Elementary Schools

Options	Estimated Total Number of Literacy Coaches	Estimated Annual Cost (Total)	Estimated Annual Cost (State)
Literacy coaches currently serving in divisions solely in a coaching capacity	172.5	$9.5 million	$5.0 million
One literacy coach per school with adjustments for school size[a]	1,123	$62.0 million	$34.5 million

Note: Costs are based on the 2012 prevailing salary and benefit costs for elementary teachers.
[a] Small schools (half or below median fall membership) receive a part-time coach and large schools (twice or more median fall membership) receive two coaches.

Source: JLARC staff analysis. Current number of full-time literacy coaches based on JLARC staff survey of divisions, spring 2011.

Another option would be to implement a larger scale literacy coaching model that is more likely to meet the needs of more teachers. Early reading experts and evidence from other states show that, ideally, a literacy coaching model would be based on one literacy coach per elementary school. In 2010, there were 1,168 elementary or primary schools in Virginia that served kindergarten through third grade. Using an assumption of one literacy coach per school would result in 1,168 literacy coaches in Virginia. However, elementary schools range greatly in size. While fall membership of the median elementary school for kindergarten through third

grade was 317 in 2010, fall membership for grades K-3 in elementary schools ranged from a low of 20 to a high of 825. Because the number of teachers needing to be served would also vary greatly in these schools, an adjustment for very large or very small schools seems appropriate.

To account for school size, the second option on Table 29 would provide one literacy coach for a typically sized school, but allocates two literacy coaches for very large schools that have twice or more the median K-3 fall membership and a part-time literacy coach for small schools with half the median fall membership or less. This would result in 1,123 coaches statewide and an estimated State cost of $34.5 million annually. This option could still leave some literacy coaches to serve relatively large school on their own. Therefore, another approach could be to allocate two literacy coach positions for every school that is 1.5 times the median school size or larger. This would raise the estimated total cost of the option to $68.5 million, with a State share of $38.1 million.

If the General Assembly were to adopt an initiative to provide literacy coaches for Virginia's elementary schools, it would be imperative for DOE to establish a definition and guidelines for literacy coaches, as well as to ensure that adequate credentialing requirements are in place to help guarantee the highest level of success of such a program (Recommendation 5 in Chapter 5). Also, as discussed in Chapter 5, ongoing support for literacy coaches would be important to ensure that they are highly trained and maximizing their effectiveness. Such ongoing support and training opportunities could be provided, at least in part, through the PALS office as part of the option discussed above.

Recommendation (7). The General Assembly may wish to consider providing funding for literacy coaches to improve reading instruction in the early grades. If the General Assembly provides funding for such an initiative, strong consideration should be given to directing the Department of Education to establish a definition and guidelines for literacy coaches, and to ensure that adequate credentialing requirements are in place for these positions.

Fund Reading Specialists—Suggested State and Local Responsibility

Funding designated for reading specialists is another way in which the State could provide increased support for early elementary reading instruction. As discussed in Chapter 5, reading specialists provide additional instruction to students who are struggling to learn to read. The importance of reading specialists has been recognized in Virginia through the addition of Section 22.1-253.12:12.G of the *Code of Virginia*, which states that "each local

school board shall employ the following reading specialists in elementary schools, one full-time in each elementary school at the discretion of the local school board." However, the State's commitment to reading specialists could be strengthened. Currently, funding is not directly provided for this provision of the Standards of Quality. Also, including language "at the discretion of the local school board" does not confer the expectation that reading specialists will be provided in all divisions without exception, and in fact, approximately eight percent of Virginia's school divisions report not having reading specialists.

An option based on the *Code of Virginia*'s requirement of providing one reading specialist in each elementary school for those schools that contain kindergarten through third grade would result in funding for 1,168 reading specialists statewide. Assuming the FY 2012 prevailing instructional salary and benefits for elementary teachers would result in a total cost of approximately $64.4 million annually for this option. The State share would be approximately $36.3 million.

Funding for early elementary reading specialists was one of the top three ways school divisions indicated on the JLARC staff survey that the State could best help improve reading performance and comprehension among Virginia's third graders. However, this option may be a slightly lower priority than providing funding to increase State support through the PALS office or funding for literacy coaches for two of reasons. First, the *Code of Virginia* indicates that funds provided for the Early Intervention Reading Initiative (EIRI) can be used for this purpose. As stated by the *Code,*

> To provide flexibility in the provision of reading intervention services, school divisions may use the state Early Reading Intervention Initiative funding and the required local matching funds to employ reading specialists to provide the required reading intervention services.

Also, the vast majority of school divisions (92 percent) report that they currently have reading specialists.

However, a separate reading specialist option is still worth considering. For those eight percent of divisions that do not have reading specialists, over two-thirds indicated that having funding from the State for this purpose would be a top way that the State could help improve reading performance and comprehension among early elementary school students. Also, many school divisions are moving towards a Response to Intervention (RtI) approach to providing reading intervention. As discussed in Chapter 6, RtI can be very resource intensive due to the small-group or one-on-one interventions required. Having more reading specialists to provide inter-

ventions and oversee aides and paraprofessionals providing such interventions would help ensure that RtI is being carried out as effectively as possible. If the General Assembly were to adopt an initiative aimed at providing funding specifically for reading specialists, it may want to require that specialists have a reading specialist endorsement as a condition of receiving the funding.

Maintain or Increase Funding for Paraprofessionals to Support the Early Reading Instruction—Suggested Local Responsibility

In addition to having literacy coaches and reading specialists to support the classroom reading program, Chapter 5 discussed that having more adults in the classroom during the reading block can be very helpful in providing differentiated instruction and keeping students on task. In addition, 80 percent of school divisions report using paraprofessionals to assist with reading intervention in kindergarten through third grade. Though a variety of State funds, including SOQ funds, can be used to help pay for paraprofessionals, the decision of whether to use State and local funds for this purpose is largely a local one. During site visits to Virginia school divisions, staff in several divisions indicated that when economic times are difficult, many localities eliminate paraprofessional and aide positions as a means to reducing educational costs. Because of the importance of these positions to the early reading program, localities are encouraged to maintain or increase funding to allow greater availability of paraprofessionals to assist with early reading instruction and intervention.

Maintain or Reduce Class Sizes in the Early Elementary Grades—Suggested State and Local Responsibility

Similarly, smaller class sizes are also more conducive to providing an effective classroom reading program. However, as with paraprofessionals, when economic times become difficult, many localities increase class sizes as a way to reduce educational costs. Due to the importance of learning to read in the early grades, the localities should be encouraged to maintain, if not reduce, class sizes in kindergarten through third grade. At the State level, the General Assembly may want to consider maintaining full funding for the K-3 Primary Class Size Reduction Initiative, which currently receives high participation from school divisions. In FY 2011, only one eligible school division opted out of this program. At the local level, localities are encouraged to continue participating in the K-3 Primary Class Size Reduction initiative and providing funds outside of the initiative to maintain or reduce class sizes in the early grades to facilitate reading instruction.

SUPPORT WELL-RUN, EFFECTIVE INTERVENTION PROGRAMS

Supporting well-run, effective intervention programs that assist struggling students are also important to improving early reading performance. Perhaps most importantly, divisions should continue to strive towards the RtI model. While divisions report that the State's Early Intervention Reading Initiative (EIRI) is either very effective or somewhat effective in helping to improve the reading performance of young students, it appears that additional resources would be better targeted at other options rather than expanding this initiative to cover all eligible third graders.

Support Quality Response to Intervention (RtI) Programs—Suggested State and Local Responsibility

Chapter 6 discussed that many school divisions are moving to an RtI approach to intervention and that RtI is advocated by experts. RtI is also the intervention approach supported by DOE, and DOE has a pilot program in place to assist Virginia school divisions in implementing this approach. Currently, 27 divisions are enrolled in DOE's pilot program. DOE should continue its pilot program to facilitate increased implementation of RtI across Virginia's school divisions, and the department has indicated its intention of doing so. School divisions should also continue their efforts to implement RtI. Funding the reading specialist and paraprofessional options discussed above would assist school divisions in implementing RtI due to the staffing levels needed to provide intensive interventions for some struggling readers.

Fully Fund the State's Early Intervention Reading Initiative (EIRI) Through the Third Grade—Suggested State and Local Responsibility

As discussed in Chapter 1, the State's EIRI program is fully funded for all eligible students in kindergarten through second grade. However, the 2010-2012 Appropriation Act indicates that funds are only provided to serve 25 percent of eligible third graders. One potential option is for the State to provide EIRI funding for all eligible third graders. DOE staff indicate that the State cost to do this would be $3.1 million annually (with a total cost of approximately $6.2 million).

This option is given a lower priority compared to other options primarily because, when asked on the JLARC staff survey for the top three ways in which the State could best help improve reading performance and comprehension among Virginia's third graders, only 28 percent of divisions selected providing funding to serve 100 percent of third grade students eligible for EIRI/PALS. The majority of divisions ranked providing increased funding for literacy coaches, reading specialists, and professional development on how

to teach reading above full funding for the EIRI initiative. Also, when asked about the effectiveness of EIRI in helping improve the number of students who read at grade level by the end of third grade, 60 percent of divisions reported that EIRI was very effective and 40 percent reported that it was somewhat effective. (No divisions reported that it was not effective.) Supporting some of the other options for improving third grade reading performance, such as increased professional development and supporting RtI, could help improve the effectiveness of the EIRI initiative.

MAINTAIN AN ACADEMIC ENVIRONMENT SUPPORTIVE OF EARLY LITERACY

In addition to the options discussed above, school divisions and the State can strive to maintain an environment that supports teaching young children to read. As discussed previously, ensuring that children have access to preschool can help prepare them for the early reading training they will receive in kindergarten. Also, implementing the strategies and best practices discussed in this report will help improve the effectiveness of school divisions' early reading programs.

Maintain and/or Expand Preschool Opportunities—Suggested State and Local Responsibility

Chapter 4 discussed research showing the importance of preschool in giving young children the necessary pre-literacy tools so that they are ready to begin learning basic literacy skills, such as phonemic awareness and phonics, when they enter kindergarten. Previous research by JLARC found the State's Virginia Preschool Initiative (VPI) to be a positive and effective program for preparing young children for kindergarten. Further, many educators in the divisions visited by JLARC staff indicated that preschool was key to helping increase student success in learning to read and is particularly crucial in helping to increase the success of at-risk children.

DOE indicates that sufficient State funding is currently available to serve 100 percent of estimated eligible at-risk four-year-olds through VPI. (Funding levels assume a 20 percent non-participation rate for eligible children, which is consistent with historical non-participation levels) To help prevent the gap in school performance which relates to socioeconomic factors from widening, it appears important to at least maintain current State levels of effort and funding for this important initiative. However, the General Assembly may also wish to consider expanding eligibility for VPI and increasing per pupil funding levels, as discussed in the 2007 JLARC report on VPI. At the local level, participating localities should continue their involvement in VPI, and eligible non-participating localities should consider starting to participate

in the program. According to DOE staff, for the 2010-2011 school year, 16 school divisions that were eligible for VPI opted out of the program. Localities should also consider expanding preschool availability to at-risk children (for example, to at-risk three-year-olds) as they are able.

Recommendation (8). Because of the importance of laying a foundation in early literacy, particularly for at-risk children, the General Assembly should, at a minimum, continue to provide current funding levels for the Virginia Preschool Initiative (VPI). Localities should continue their participation in VPI. Eligible localities not currently participating should consider starting to participate in the program. Localities should also expand preschool availability to at-risk children.

Explore and Implement Best Practices in This Report—Suggested Local Responsibility

A final option for improving the reading performance of third graders, in addition to those addressed above, is for school divisions to implement the wide array of best practices discussed in this report. These include the strategies discussed in Chapter 4 for teaching the six key components of a reading program, structuring a daily reading block that is at least 90 to 120 minutes in length, including small-group differentiated instruction, and having high quality reading material available at different levels. Other strategies and best practices to help meet the needs of struggling readers could also be implemented. Many of the identified best practices and strategies do not require large amounts of additional resources, but could be very helpful in improving the effectiveness of the classroom reading program in Virginia's public schools.

SUMMARY OF OPTIONS

Table 30 provides a summary of the State and local options for improving reading performance in kindergarten through third grade. Options are prioritized based on the discussion above and include estimated annual State costs.

Table 30: Options to Improve Reading Performance in Kindergarten Through Third Grade in Virginia

	Priority	Suggested Responsibility	Estimated Additional Annual Cost (State)[a]
Maintain Early Elementary Teachers Well Trained in Reading Instruction			
Maintain or expand training opportunities in early reading for teachers	High	Local	$0
Provide more support and guidance on best practices for teaching reading through the PALS office	High	State	$380,000-$600,000
Provide Support for Early Elementary Classroom Teachers			
Fund literacy coaches	High	State/Local	$5.0 million -$34.5 million
Fund reading specialists	Medium	State/Local	$36.3 million
Maintain/increase funding for paraprofessionals and aides to support the classroom reading program	Medium	Local	$0
Maintain or reduce class sizes in the early elementary grades	Medium	State/Local	$0
Support Well-run, Effective Intervention Programs			
Support quality Response to Intervention programs, particularly in poor divisions	High	State/Local	$0
Fully fund the State's Early Intervention Reading Initiative through third grade	Low	State/Local	$3.1 million
Maintain an Academic Environment Supportive of Early Literacy			
Maintain and/or expand preschool opportunities	High	State/Local	$0[b]
Explore and implement best practices in this report	High	Local	$0

[a] Cost to local school divisions not determined as part of this study.

[b] Maintaining current service levels for the Virginia Preschool Initiative would not increase State costs over current funding levels. However, expanding eligibility for the program or increasing per pupil amounts would increase both State and local costs.

Source: JLARC staff analysis and data from the Virginia Department of Education and PALS office at the University of Virginia.

JLARC Recommendations:

Strategies to Promote Third Grade Reading Performance in Virginia

1. The Department of Education should revise its online document explaining Standards of Learning (SOL) cut scores to indicate, in general, how Item Response Theory, in combination with the results from subsets of new test takers, is utilized to (1) estimate the "ability" level of new test takers and (2) determine the difficulty level of SOL test versions and the number of correct responses required to achieve a passing or advanced score on the different test versions. The department should make the availability of the revised document known to the divisions through a Superintendent's Memo. (p. 35)

2. To help schools bring greater focus to reading skill development in third grade, the Board of Education should limit the Standards of Learning tests taken by third grade students to reading and math. (p. 37)

3. The Department of Education should collect information from lower performing divisions that have recently made changes such as enhanced teacher training in an effort to improve student reading performance in the early grades. The department should then assess whether these actions have had a positive effect on student reading performance in these divisions and, if so, whether these actions could be adopted by other school divisions to improve reading instruction. (p. 80)

4. The General Assembly may wish to direct the Department of Education to establish a definition for literacy coaches, including guidelines on how their time should be allocated for various coaching activities. The General Assembly may also wish to direct the Department of Education to establish a credential or endorsement for literacy coaches, or consider amending the higher education regulations leading to a reading specialist endorsement, to ensure that literacy coaches have adequate training and skills to maximize their effectiveness. (p. 92)

5. Due to the critical importance of having teachers well trained in how to teach reading, school divisions should maintain and, when possible, increase access to quality training opportunities for early elementary teachers related to reading instruction. (p. 117)

6. The General Assembly may wish to consider providing additional resources to the PALS office at the University of Virginia to develop additional professional development and mentoring capabilities to assist Virginia school divisions in improving their early reading programs. (p. 119)

7. The General Assembly may wish to consider providing funding for literacy coaches to improve reading instruction in the early grades. If the General Assembly provides funding for such an initiative, strong consideration should be given to directing the Department of Education to establish a definition and guidelines for literacy coaches, and to ensure that adequate credentialing requirements are in place for these positions. (p. 121)

8. Because of the importance of laying a foundation in early literacy, particularly for at-risk children, the General Assembly should, at a minimum, continue to provide current funding levels for the Virginia Preschool Initiative (VPI). Localities should continue their participation in VPI. Eligible localities not currently participating should consider starting to participate in the program. Localities should also expand preschool availability to at-risk children. (p. 126)

Appendix A Study Mandate

SENATE JOINT RESOLUTION NO. 31

Directing the Joint Legislative Audit and Review Commission to study ways to promote and ensure early reading proficiency and comprehension among third graders in the public schools. Report.

Agreed to by the Senate, February 15, 2010

Agreed to by the House of Delegates, March 9, 2010

WHEREAS, reading is the key to all learning, is the most important skill an individual can acquire, and is essential for economic and social opportunities, particularly in light of the global proliferation of technology and information; and

WHEREAS, according to the Dictionary Project, "reading is the most important skill and many educators view third grade reading as the dividing line between learning to read and reading to learn, and that mastering reading early in life, especially by third grade, is linked to academic success and productivity later in life"; and

WHEREAS, the ability to read enables children to understand and interpret the information and images they receive; contributes to personal empowerment, growth, and enjoyment; builds vocabulary; aids in verbal communication; and provides educational opportunities that can broaden and change lives; and

WHEREAS, reading stimulates the imagination, promotes role play and the development of fine motor skills and eye hand coordination, enhances social skills, and allows children to experience places, things, and events that they are not able to physically explore; and

WHEREAS, national educational research results indicate that "38% of 4th graders nationally cannot read at the basic level, which means they cannot read and understand a simple paragraph from an age-appropriate children's book, and in some school districts this figure rises to over 70%"; and

WHEREAS, serious reading problems impede academic performance through college and are associated with delinquency, drug abuse, unemployment, crime, and other social problems; and

WHEREAS, the more children read, the better they can read and the better their comprehension; children who are good readers experience academic success and have a positive attitude toward learning, and those who read with their families develop a love of reading that lasts a lifetime; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, that the Joint Legislative Audit and Review Commission be directed to study ways to promote and ensure early reading proficiency and comprehension among third graders in the public schools.

In conducting its study, the Joint Legislative Audit and Review Commission shall (i) determine the number of third graders who read at grade level; (ii) rank the school divisions according to the number of third graders who passed the most recent third grade reading test; (iii) identify best practices utilized

by school divisions with the highest percentage of third graders who read at grade level; (iv) examine the findings and recommendations of state and national studies pertaining to the efficacy of early reading proficiency and comprehension and its relationship to academic success, and recommend those recommendations appropriate for implementation in Virginia; and (v) determine strategies to increase the number of third graders who pass the third grade reading test and ways to improve and sustain the early reading proficiency of third grade students.

Technical assistance shall be provided to the Joint Legislative Audit and Review Commission by the Department of Education. All agencies of the Commonwealth shall provide assistance to the Joint Legislative Audit and Review Commission for this study, upon request.

The Joint Legislative Audit and Review Commission shall complete its meetings for the first year by November 30, 2010, and for the second year by November 30, 2011, and the Chairman shall submit to the Division of Legislative Automated Systems an executive summary of its findings and recommendations no later than the first day of the next Regular Session of the General Assembly for each year. Each executive summary shall state whether the Joint Legislative Audit and Review Commission intends to submit to the General Assembly and the Governor a report of its findings and recommendations for publication as a House or Senate document. The executive summaries and reports shall be submitted as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents and reports and shall be posted on the General Assembly's website.

Appendix B Research Activities and Methods

Key research activities and methods for this study included

- analysis of student-level SOL test result data provided by the Virginia Department of Education (DOE),
- analysis of additional data available at the school or division levels from various sources,
- survey of school divisions about early reading programs,
- site visits to 13 school divisions to interview school principals, teachers, and school division reading coordinators and observe 44 third grade classrooms in 22 schools during their reading block
- structured interviews with DOE staff and academic literacy experts in Virginia universities,
- a review of documents provided by DOE, and
- an extensive review of early reading literature.

ANALYSIS OF STUDENT-LEVEL SOL TEST RESULT DATA

JLARC staff received third grade student-level SOL reading test result data from DOE. The data set contained SOL scaled scores and other variables for 86,193 students tested on the SOL. The data set was obtained to assess the reading performance of Virginia public school third grade students by school and division and examine the association between various factors (demographic and socioeconomic) with student, school, and division pass rates and average scaled test scores on the third grade SOL reading test. By obtaining student-level SOL data, JLARC staff were able to identify the percentage of students in schools and divisions which met other thresholds besides the existing SOL basic, proficient, and advanced levels described in this report.

JLARC staff received three school years (spring 2008, 2009, and 2010) of student-level third grade SOL reading scaled test scores from DOE. As the most recent year for which data were available during the research phase of the projects, results for the 2010 SOL received the greatest level of attention. Each dataset included the following data elements:

- Test administration year

- Assessment type (SOL)
- Division code
- Division name
- School code
- School name
- Student's research ID
- Gender (M/F)
- Date of birth (mm/yyyy)
- Race / Ethnicity Code
- Economically disadvantaged (Y/N)
- Disability status of student
- Limited English Proficiency (LEP) flag (Y/N)
- Grade 3 reading SOL scaled score
- Proficiency (Pass Basic/Advanced/Proficient, or Fail)

For each student in the dataset, JLARC staff created a binary variable called "passed" (value of 0 or 1) indicating whether or not the student passed the third grade SOL reading test (scaled score was 400 or greater). This "passed" variable was used as one of two dependent variables in the regression analysis. The second dependent variable was the scaled score on the third grade reading SOL test. (See Appendix D for more details on the statistical analysis that was conducted using these data and is referenced in the report.)

ANALYSIS OF ADDITIONAL DATA AVAILABLE AT SCHOOL AND DIVISION LEVELS

JLARC staff used the student-level SOL dataset from DOE and added a number of independent variables that were only available at the school- or division-level. These additional variables were merged into the student-level dataset by school and/or division number and the school-level or division-level average served as a proxy value for each student for those indicators. Table B-1 lists all of the student-, school-, and division-level variables that JLARC staff analyzed.

Once all school- and division-level variables were merged into the student-level dataset, the team performed correlation and regression analyses to identify the factors that explain the most variation in third grade students' SOL reading pass rates and scaled scores (the dependent variables). (See Appendix D for more details on these analyses.) In addition, JLARC staff also examined student performance on the third grade SOL reading test aggregated at the division level. Further, to account for the variation among schools within divisions in terms of student performance and key factors associated with student performance on the SOL reading rest, the student-level dataset was also aggregated and analyzed at the

Table B-1: Student-Level, School-Level, and Division-Level Independent Variables Included in Correlation and Regression Analysis

Student-Level Variables	Sources
Gender Race/ethnicity Age of student when tested Identified as economically disadvantaged Disability status of student (14 disability types) Limited English Proficiency (LEP) flag	• Department of Education (via data request)
School-Level Variables (not available at the student-level)	**Sources**
Poverty -- three variables, estimated based on the percentage of students that participated in the State's: Free lunch program Reduced lunch program Free or reduced lunch program (combined) Percent of students taking alternative tests (by type of test) Percent of students not tested Safety – offenses against students Safety – offenses against staff Disruptive behavior incidents Mobility rate (percent of students who change school divisions or schools one or more times during the school year) Percentage of teachers with an advanced degree (grades K-3) Percentage of teachers with a provisional license (grades K-3) Percentage of classes not taught by highly qualified teachers (grades K-3) Percentage of teachers with three or fewer years of experience (grades K-3) Average years of teacher experience in Virginia (grades K-3) Average years of teacher experience within current division (grades K-3) Average years of total teacher experience (grades K-3) Number of fights per 100 students Average daily attendance rate Percent of incoming kindergarten students by type of preschool experience	• Department of Education's School Nutrition Unit Program • Department of Education (via data request) • Department of Education's School Report Card Data • 5-year American Community Survey (ACS); released in December 2010
Division-Level Variables (not available at student- or school-level)	**Sources**
Percentage of female-headed households Percentage of adults 25 and over that completed a bachelor's degree Percentage of adults 25 and over without a high school degree Adjusted gross income (AGI) per capita Median household income Percent of children in locality between ages 5 through 9 <u>not</u> in public school fall membership (proxy estimate for private school attendance) Average PALS "no pass" percentage for kindergarten, first, and second grade students Ratio of the number of second grade PALS "no pass" students (2007-2009) to the number of kindergarten PALS "no pass" students (2005-2007) Local fiscal stress index Per capita revenue capacity Average elementary teacher salary Instructional expenditures per pupil Composite index of local ability to pay Ratio of third grade students to third grade classroom teachers Ratio of all elementary pupils to number of elementary reading specialists Hours of reading block instruction per week	• 5-year American Community Survey (ACS) released in December 2010 • JLARC staff calculations using data provided by DOE • JLARC staff calculations using data from Weldon Cooper Center • Commission on Local Governments • Department of Education's School Report Card Data • JLARC survey of school divisions

school level. By conducting these additional analyses, JLARC staff were able to distinguish between factors associated with students' reading performance at the school versus division level.

In addition to the data shown in the table, JLARC staff also obtained Phonological Awareness Literacy Screening (PALS) division-level data from DOE. The department provided JLARC staff with data for kindergarten, first grade, and second grade, by school division, for the last ten school years (2000-01 to 2009-10). The data included

- the number of students by grade that did not pass the PALS benchmark; and
- the total number of students screened.

Variables reflecting the extent to which students did not meet or exceed PALS benchmarks were created and were examined in the statistical analysis for associations with SOL performance.

JLARC staff also requested and received preschool experience data collected by DOE. As a part of kindergarten registration each school year, Virginia public schools require parents/guardians to complete a preschool experience form, which indicates the type of preschool experience the child had within the past six months, as well as how much time each week the child was in the preschool program. DOE collects this data from Virginia public schools for every child registering for kindergarten. However, as noted in the report, there were limitations with regard to the analytical usefulness of this data. The data were aggregated data and not student-level data. Schools not reporting data were instructing about 20 percent of the students. Still, the data could be used to identify the preschool experience and setting for incoming kindergarten students, at least among those for which data were available. (See Chapter 4 for a table listing the types of preschool experiences.)

SURVEY OF SCHOOL DIVISIONS ABOUT EARLY READING PROGRAMS

JLARC staff surveyed the 132 school divisions to learn more about the challenges faced by school divisions in teaching young students to read, school divisions' early reading programs, and divisions' perspectives about reading assessments and assistance provided by the State to promote early reading. School division reading coordinators for elementary education or individuals responsible for literacy instruction in the early grades completed the survey.

The survey requested information on the following:

- background on school division and students in the division;

- school division practices in preparing for SOL reading tests;
- plans for and the practicality of achieving a 95 percent pass rate on the third grade SOL reading test;
- use of additional assessments besides the SOLs to identify grade-level reading performance;
- details and practices of each division's early elementary classroom reading program;
- approaches taken by teachers to promote student reading comprehension;
- professional development or training for third grade teachers specifically on how to teach reading;
- reading intervention and enrichment programs;
- the effectiveness of the Early Intervention Reading Initiative (EIRI) in helping school divisions improve the number of students who can read at grade level by the end of third grade; and
- the usefulness of guidance documents provided by the Virginia Department of Education in helping to develop early reading programs in the division.

One hundred and fifteen school divisions out of 132 responded to the survey (88 percent response rate). Divisions responding to the survey instructed 95.5 percent of the third grade students who took the 2010 reading SOL. Although follow-up requests for a response were made, 17 school divisions did not respond to the survey, and these divisions are shown in Table B-2. Pass rates among these divisions ranged from a low of 55 percent in Charles City County to a high of 91 percent in Galax City.

SITE VISITS TO SELECTED SCHOOL DIVISIONS AND SCHOOLS

Based on a statistical analysis of the 2010 third grade SOL reading test results, JLARC staff selected 13 school divisions (and 22 schools) to visit. The divisions selected are shown in Figure B-1. Divisions were selected so that a mix of third grade SOL reading test performance would be included. Particular attention with regard to performance was paid to the extent of positive or negative difference between a division's actual pass rate and the pass rate predicted for the divisions based on socioeconomic factors. Divisions were also selected so as to ensure some coverage of

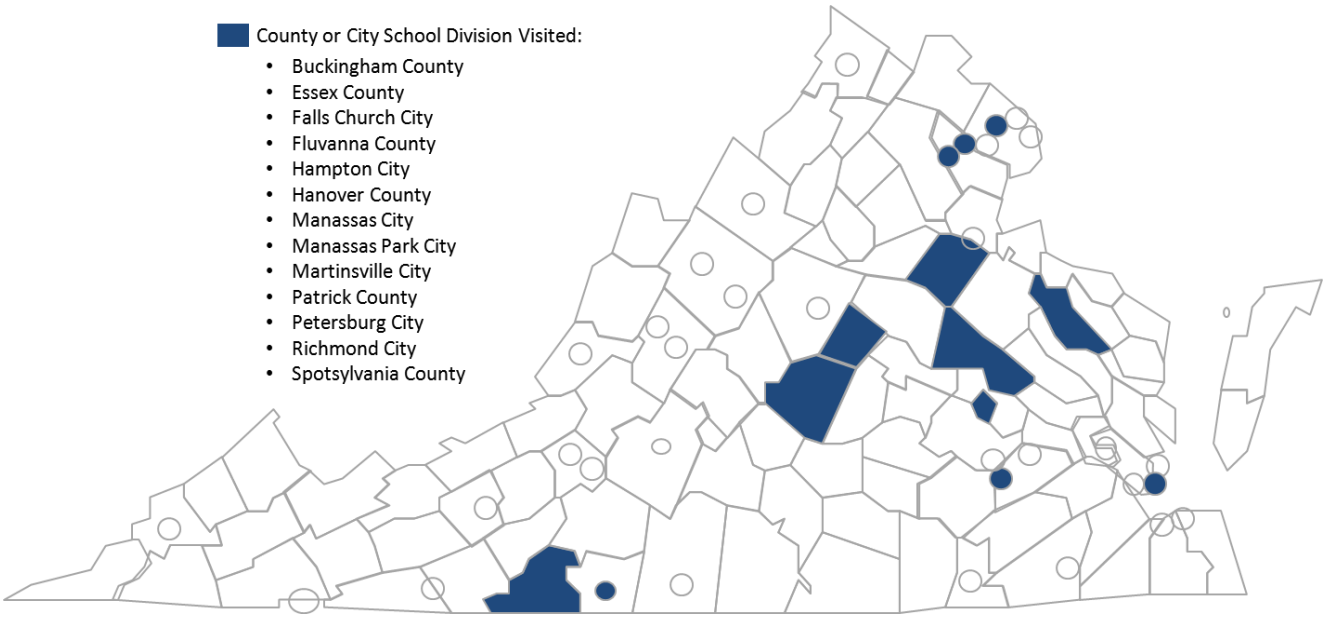
- large and small divisions,
- urban, suburban, and rural divisions, and

Table B-2: Seventeen of the 132 Divisions Did Not Respond to the Survey

School Division	Third Grade Students Taking 2010 Reading SOL	Pass Rate, 2010 Third Grade Reading SOL
Bland County	74	82%
Charles City County	44	55
Danville City	453	83
Dickenson County	161	79
Fredericksburg City	215	72
Galax City	80	91
Henry County	519	88
Isle of Wight County	387	87
King George County	278	81
Mathews County	95	83
New Kent County	192	83
Northumberland County	108	89
Powhatan County	326	84
Pulaski County	343	81
Russell County	272	82
Surry County	65	78
Westmoreland County	130	72
TOTAL	***3,742***	

Source: JLARC staff analysis of 2010 third grade reading SOL test data provided by the Department of Education.

Figure B-1: JLARC Staff Visited 13 School Divisions in Virginia and Observed 44 Classrooms During Reading Block



- divisions providing instruction in localities with relatively low and high local ability to pay for education.

Schools were also selected so as to include several with pass rates substantially exceeding or substantially below predicted performance.

All school divisions selected for inclusion in the site visits agreed to have JLARC staff come to the division to interview personnel and observe third grade classrooms.

Interviews With School Principals, Teachers, and School Division Reading Coordinators

To obtain more in-depth information on selected school divisions in the three groups listed above and the reading programs used in these divisions, JLARC staff visited 13 school divisions and a total of 22 schools to interview school principals, teachers, and school division reading program coordinators. During these interviews, JLARC staff inquired about the items listed in Exhibit B-1.

Exhibit B-1: Discussion Topics of Interviews With School Principals, Teachers, and School Division Reading Coordinators

- Biggest challenges in teaching third grade students to read
- Extent to which students have challenging home environments
- Parental support and involvement
- Key factors or best practices used to increase reading success among third grade students
- A realistic goal for the percent pass rate that can be achieved on the reading SOL test
- Feasibility of increasing performance on the reading SOL test in general and among different subsets of the student population
- SOL reading test preparation practices used
- Circumstances under which a student would not take the third grade reading SOL test
- PALS or other assessment instruments used to assess students' reading skills throughout the year and to help plan reading instruction
- Whether specific guidance is given to teachers on how to structure classroom reading programs
- Schools' ability to provide reading and word study instruction to meet students' needs at their different levels
- Whether teachers currently receive adequate professional development training in teaching children to read
- Whether it is critical or necessary for divisions to have reading specialists to work with early grade students needing special attention in reading
- Whether it is critical or necessary for divisions to have literacy coaches to work with teachers in the early grade to implement best practices
- Extent to which third graders spend time outside of class reading
- What could be done in the classroom for students who do not receive much help or encouragement with reading at home
- How the State could best help improve reading performance and comprehension among Virginia's third graders

Classroom Observations During Reading Block

In addition to interviewing school principals, teachers, and school division reading program coordinators on site visits around the State, JLARC staff also conducted observations in 44 classrooms to identify various practices and strategies (best and problematic) currently being utilized during a classroom reading block. These observations also allowed JLARC staff to identify approaches third grade teachers take to promote student reading comprehension.

To assist with the classroom observations, JLARC staff considered several observation instruments used by early reading academic experts. The *School Change Classroom Observation Manual* (created by Barbara M. Taylor at the University of Minnesota), specifically designed for the observation of literacy activities, was selected as the instrument which most seemed to fit with the study research purpose. The *School Change Classroom Observation Manual* was developed for use in the Effective School / Accomplished Teacher study (Taylor, et al., 2000) and the CIERA School Change in Reading Project (Taylor and Pearson, 2001). The purpose of the *School Change Classroom Observation Manual* is to give elementary school teachers data based on the observation literacy lesson related to their grouping practices, literacy activities, materials, interaction styles, expected student responses to the literacy activities, and students' engagement rate.

Observations of 44 classrooms in 22 schools were conducted for this study.

The *School Change Classroom Observation Manual* was accompanied by a CD that included 47 video clips of literacy instruction provided to early elementary students (kindergarten through third grade). JLARC staff used these video clips to become familiar with the steps for conducting classroom observations and the coding scheme. Subsequently, JLARC staff created an observation form customized for data collection purposes for use in 44 classroom observations at the 22 selected schools.

As shown in Exhibit B-2, JLARC staff recorded classroom observations every five minutes. The classroom observation form was used to code one observation for each literacy activity observed in each five-minute block, and JLARC staff followed the steps listed in the exhibit for each observation recorded.

In addition to completing the classroom observation form for each classroom observed, JLARC staff also made some supplemental observations in classrooms as feasible, to consider some overarching as well as some specific factors, such as:

Exhibit B-2: Steps for Conducting Classroom Observations

For each five-minute block:

1. Write down a narrative of what is happening in the classroom, including what the teacher and children are saying and doing.

2. Code the three to four most salient literacy activities that occurred during the five-minute block.

    a. For every literacy activity, code:
    - Who was providing the instruction or working with the students
    - Instructional grouping(s) used for the literacy activity
    - Major academic focus of the literacy activity
    - Materials being used by the teacher and students for the literacy activity
    - Teacher interaction styles being used during the literacy activity
    - Expected responses of the students for the literacy activity

3. At the end of the five-minute observation, record the total number of children who appear to be on task.

4. Record the total number of children in the classroom.

Source: *School Change Classroom Observation Manual (2004)*, Barbara M. Taylor, University of Minnesota.

- Is the classroom environment conducive to reading? (Were books displayed in the classroom that were available for student reading, and was there a wide range of genres and levels of difficulty that were attractively arranged to encourage use?)
- Is there access to computers for generating text with word processing and internet use?
- What level of enthusiasm for reading did the teacher display?
- Were there opportunities during the reading block for the children to make any choices in the individual or group reading tasks or activities?
- To what extent were students actively engaged, passively attentive, or disinterested and possibly misbehaving?
- Was small group differentiated instruction utilized during the observation period?
- Did the teacher or a reading specialist work with each of the small groups at some point during the small group time?
- Were the workstations used during the small group time related to literacy and/or a reinforcement of the literacy skills being taught?
- Were workstations or independent work provided during the small group time differentiated based on students' literacy levels?

- For the time period when small groups were not working with the teacher or a reading specialist, were students working independently and actively engaged in the workstations or activities provided?

STRUCTURED INTERVIEWS

JLARC staff conducted several interviews with DOE staff to discuss the following

- SOL test result data,
- PALS data,
- preschool experience data,
- analysis on the impact of Virginia Preschool Initiative (VPI) or Head Start on early reading performance,
- school division participation in the VPI program, VPI's funding status, status of Governor Kaine's initiative to expand the VPI program,
- the process for setting the SOL cut score each year for third grade reading,
- Response to Intervention (RtI) programs in Virginia,
- Early Intervention Reading Initiative (EIRI), and
- teacher preparation, higher education teacher training programs, and teacher endorsement requirements.

JLARC staff also interviewed staff at the PALS office and several academic early literacy experts in Virginia universities to learn what they have found to be effective practices and strategies based on their own research, and to help identify pertinent studies and research undertaken by other experts. These interviews also covered achievement levels considered necessary or helpful for future academic success, and the extent to which student reading skills require attention in early grades compared to later grades.

EXTENSIVE REVIEW OF EARLY READING LITERATURE

Throughout the course of this study, JLARC staff conducted an extensive review of early reading literature, with particular emphasis on research-based practices to identify best practices in early reading programs. The quantity of literature in the field of literacy instruction, learning, and assessment is vast. JLARC staff consequently relied upon the advice of several Virginia academic experts regarding top-notch experts and books in the field. Use of these books as well as searching the internet revealed additional literature of interest. Appendix F includes a bibliography that lists

many of the books and articles which are cited or which made an impact in the preparation of the report.

JLARC staff also reviewed information on policies and programs in other states that are known to have particularly successful reading programs, as well as federal resources. In addition, JLARC staff also reviewed other documents on the subject of reading test scores and success thresholds.

Appendix C

2010 Released SOL Test for Third Grade Reading

This appendix includes the 2010 released SOL test for third grade reading. All released SOL tests are available on the Department of Education's website at http://www.doe.virginia.gov/testing/sol/released_tests/index.shtml

VIRGINIA STANDARDS OF LEARNING

Spring 2010 Released Test

GRADE 3
READING

Form R0110, CORE 1

Property of the Virginia Department of Education

Copyright ©2010 by the Commonwealth of Virginia, Department of Education, P.O. Box 2120, Richmond, Virginia 23218-2120. All rights reserved. Except as permitted by law, this material may not be reproduced or used in any form or by any means, electronic or mechanical, including photocopying or recording, or by any information storage or retrieval system, without written permission from the copyright owner. Commonwealth of Virginia public school educators may reproduce any portion of these released tests for non-commercial educational purposes without requesting permission. All others should direct their written requests to the Virginia Department of Education, Division of Student Assessment and School Improvement, at the above address or by e-mail to Student_Assessment@doe.virginia.gov.

Directions

Read the passage. Then read each question about the passage and choose the best answer.

SAMPLE A

Aunt Jackie's Ring

1 For Mary's birthday, her aunt gave her a ring that was more than 100 years old. "Take good care of it," her aunt warned. She did just that until one day Mary looked down at her hand and noticed the ring was gone.

2 "Aunt Jackie is going to be so disappointed in me," thought Mary. Then Mary remembered she put the ring in her pocket when she washed her hands at the sink. "Thank goodness!" Mary said to herself. After that, she never took off Aunt Jackie's ring again.

This story is MOSTLY about —

A a normal day
B Mary's aunt
C a special ring
D Mary's birthday

Directions

You do not need to read a passage to answer the following question. Read and answer the question.

SAMPLE B

Read this sentence.

> **"Mrs. Johnson is my favorite teacher, and I really <u>enjoy</u> her class," Mario told his mother.**

In this sentence, the word <u>enjoy</u> means —

F like
G hear
H notice
J save

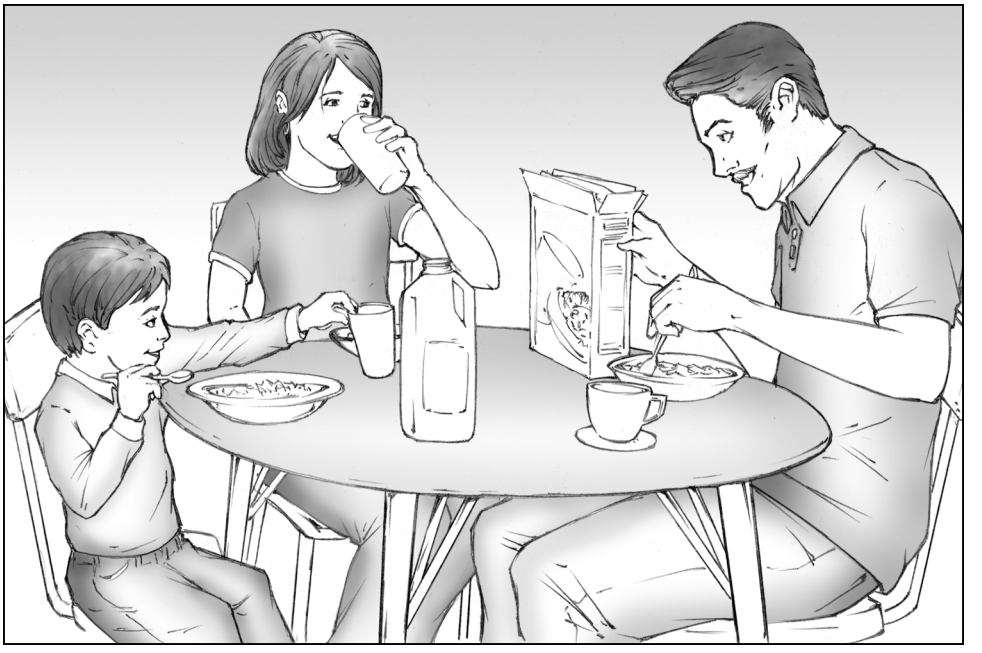
GO ON

Go to the next page and continue working.

GO ON

Directions: Read the story and answer the questions that follow.

Pass the Milk



1 Sonia stared at the dry cereal in her bowl. The milk carton was sitting across the table in front of Sonia's little brother, Trenton. Sonia was calmly waiting for Trenton to stop talking so she could ask him to pass the milk.

2 "I hope I have enough pencils," Trenton said. "Maybe they should all be sharpened before we leave." It was Trenton's first day of school. He was starting kindergarten, and he was very excited as well as a little nervous.

3 Sonia sighed. She knew it was rude to interrupt, but what if Trenton never stopped talking? A growl came from Sonia's stomach, and the third grader decided not to wait anymore. Sonia knew what to expect at school. She couldn't understand what all the excitement was about. All she wanted to do was eat her cereal, but she needed the milk.

4 "Trenton—" said Sonia.

5 "I think Jorge is in Ms. Rick's class too," Trenton said. He had not even heard his sister call his name. He was too busy talking to his father about what might happen on his first day of school.

6 "Trenton—" said Sonia a little louder.

7 “I wonder if I’ll be able to find the lunchroom. Dad, do you think that I will be able to find my way around? What if I am late for lunch?”

8 “Trenton, you will be fine!” said Dad.

9 “Trenton!” Sonia said loudly.

10 Trenton stopped talking. Dad looked up from his cup of coffee and raised his eyebrows.

11 “I’m sorry, but I’ve been trying to ask Trenton to pass the milk,” Sonia said. “He’s been talking nonstop for an hour. What is the big deal about Trenton starting kindergarten?”

12 “I have not been talking for an hour,” Trenton said.

13 “You have too,” Sonia said.

14 “Have not,” Trenton said.

15 “That’s enough,” Dad said to Trenton.

16 Sonia grinned at her brother. Dad frowned at Sonia. “I remember breakfast on your first day of kindergarten,” said Dad.

17 Sonia thought back to that day. She had been nervous, and she had asked Dad a million questions. Dad had answered every one. Maybe she needed to show a little more understanding toward her younger brother. It would be neat to have him at the same school that she had been attending for almost four years now.

18 Sonia turned to Trenton. “Don’t worry about getting lost. Your teacher will take you where you need to go. I can look in your backpack to see if you have everything you need,” she said.

19 Trenton’s face brightened. “Really?”

20 “But you have to do something first,” Sonia said.

21 “What’s that?” Trenton asked.

22 Sonia smiled at her little brother. “Pass the milk.”

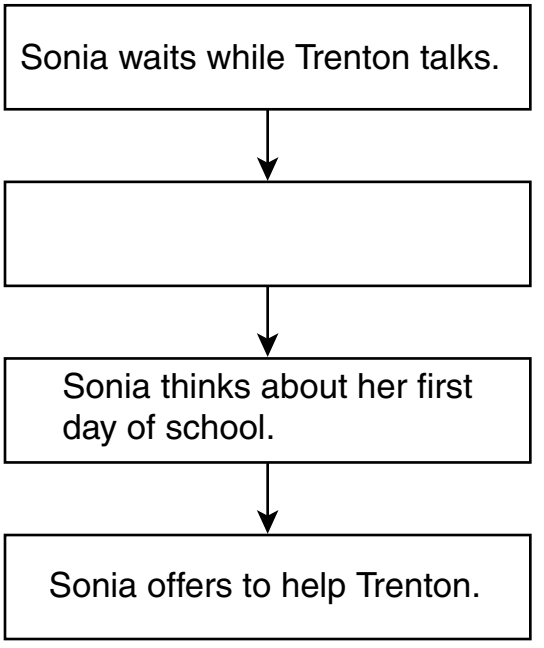
1 Which question does paragraph 2 answer?

A Who is Trenton's teacher?
B What is Trenton's favorite food?
C Where does Trenton go to school?
D Which grade is Trenton in this year?

2 How does the reader know that Trenton is unsure about school?

F He eats breakfast quickly.
G He tries to find something to do.
H He wants to get to school early.
J He asks a lot of questions.

3 Look at the flow chart.



The chart shows what happens in the story. Which of these belongs in the empty box?

A Sonia eats her breakfast without milk.

B Sonia tells Trenton about school.

C Sonia tries to speak to Trenton.

D Sonia gets ready for school.

4 Based on the story, why does Sonia decide to help Trenton?

F She begins to understand how Trenton feels.
G Her teacher wants her to be kind to Trenton.
H Her dad asks her to take care of Trenton.
J She wants Trenton to pass the milk.

5 Why is Dad important to the story?

A He passes the milk to Sonia.
B He makes breakfast for Trenton.
C He helps Sonia remember her first day of school.
D He shows Trenton where his classroom is at school.

6 What is the main problem in the story?

F Trenton and Sonia are late for school.
G Sonia does not want to help her brother.
H Sonia is not able to make Trenton listen to her.
J Trenton wants to stay home from school.

7 Based on the story, what will Sonia MOST likely do after she eats breakfast?

A She will ride the bus.
B She will check Trenton's backpack.
C She will make her bed.
D She will prepare Trenton's lunch.

8 The main reason to read this story is to —

F understand how a boy feels about starting school
G learn about favorite foods to eat at home
H discover how to make breakfast at home
J find out what supplies are needed for school

9 Which sentence shows that something belongs to Trenton?

A Trenton's almost finished eating.
B Trenton's backpack is on the table.
C Trenton's glad his friend will be in his class.
D Trenton's going to the same school as his sister.

Directions: Read the flier and answer the questions that follow.

Field Trip Day

On Friday, May 6, our class will take a field trip to North Park Zoo. The zoo has lions, elephants, and other interesting animals. Many of the animals we have been studying will be there for us to closely examine.

Our class will be divided into six teams. Each team will have five students and one leader. The leaders are listed in the table.

Team 1	Miss Banker
Team 2	Mrs. Lopez
Team 3	Mr. Harper
Team 4	Miss Abel
Team 5	Mr. Soto
Team 6	Mrs. Thomas

What You Need to Know

On the morning of the trip, the students will be divided into teams. One student from each team will receive a camera. The camera person will take pictures of the team, the animals, and other fun sights at the zoo.

All students should wear blue shirts. Be sure to wear comfortable shoes because we will be walking all day. Please bring a bag lunch and a drink. We will have a picnic at the park inside the zoo. Bring a healthy snack, such as a piece of fruit and a drink, for later in the day.

When we are at the zoo, always remain with your team. Do not leave the team without asking permission from the team leader.

Feeding the Animals

The ONLY animals that students are allowed to feed are those in the Children's Zoo. Special food can be bought at the zoo for 25 cents and given to these animals. Do not feed your lunch to them. It is not good for the animals.

Parent Information

The cost is $1.00 for students and $3.00 for adults to enter the zoo. The students will leave the school at 9:00 A.M. and return at 2:30 P.M.

Please sign the permission slip. Return it along with the money to your child's teacher by Monday, May 2. Both the permission slip and the money should be in an envelope with your child's name written on the outside.

FIELD TRIP PERMISSION SLIP

Child's Name _____

Parent's Name _____

My child will go on the field trip **YES** or **NO**

Number of adults that will go on the field trip _____

Parent's Signature _____

GO ON

10 Read this dictionary entry.

> **park** (pärk) *n.* **1.** A place where cars are kept. **2.** A piece of land where children can play. **3.** A building used for team sports.
> *v.* **4.** To leave a car for a short time.

Under "What You Need to Know," which meaning of park is used?

F 1
G 2
H 3
J 4

11 Read this sentence from the flier.

> **When we are at the zoo, always remain with your team.**

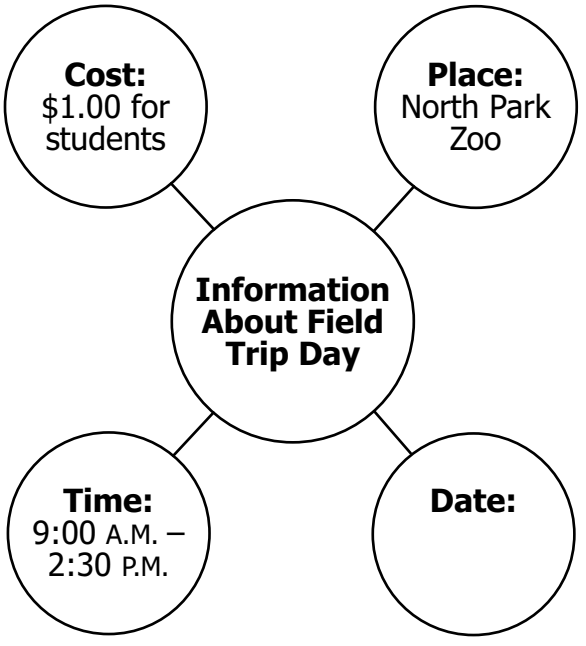
Which word means the opposite of remain?

A meet
B enter
C leave
D gather

12 Miss Abel will be the leader for Team —

F 1
G 2
H 3
J 4

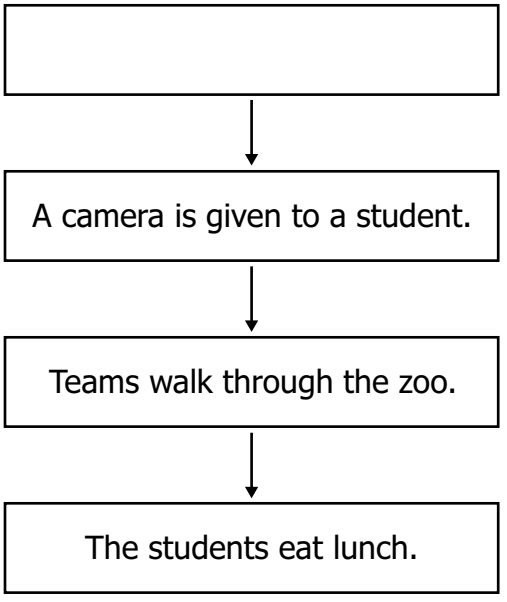
13 Look at the web.



What information belongs in the circle titled "Date"?

A May 2
B May 3
C May 6
D May 9

14 Look at the flow chart.



Which of these belongs in the empty box?

F The class is divided into teams.
G The class is given blue shirts.
H The class visits the animals.
J The class stops for a snack.

15 Students should not feed their lunches to the animals because —

A the team leaders need snacks later
B the animals like their own food better
C the food may make the animals sick
D the students will become hungry later

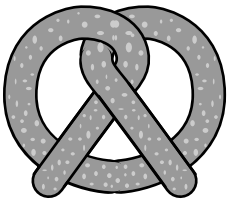
16 The BEST reason to have the field trip is because the students will —

F see animals they have studied
G work with team leaders
H have a picture taken
J eat healthy snacks

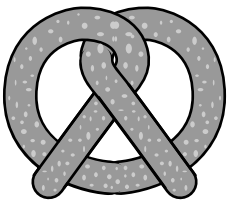
17 One reason to read this flier is to —

A understand directions to the zoo
B discover a new fact about animals
C find out what animals are at the zoo
D learn what is needed for the field trip

Directions: Read the story and answer the questions that follow.



Twists and Turns



1 Things were not going well for Henry, the village pretzel maker. The Great Pretzel Contest was today. People from across the land would try to win the title of the best pretzel maker. The villagers wanted Henry to win, but Henry had problems. There was not enough wood in the oven to bake a single pretzel. Mice had eaten half the flour during the night. There was a leak in the roof. The night before, rain had dripped through the roof and ruined the salt.

2 The villagers saw Henry's troubles. The woodsman brought wood for the oven. The farmer gave Henry more flour. The fisherman brought dried salt from the sea. This was all very good except for one thing. There was hardly enough time for Henry to make his pretzel and take it to the contest. Henry was determined, though.

3 As fast as he could, Henry put the wood in the oven. He gathered all his supplies and made the dough. Henry rolled the dough into the shape of a long snake as he thought about the help from the villagers.

4 "When I had no wood," Henry thought as he made a loop in the dough, "the woodsman brought me wood."

5 "When I had no flour," he made a second loop, "the farmer brought me flour."

6 "When I had no salt," he tucked the ends of the dough under the loops, "the fisherman brought me salt."

7 "My good friends," Henry thought to himself, "helped me." He sprinkled the sea salt on top of the pretzel.

8 Henry baked the pretzel in the hot oven. Then he ran as fast as he could to the contest.

9 "I'm sorry, Henry," one of the judges said. "You have come too late."

10 Henry's friends were sad for him, but Henry just laughed.

11 "I'm not sad!" he shouted. "I have good friends who helped me. Now I have a wonderful pretzel to share with them!"

18 Which question does paragraph 2 answer?

F Where does Henry live?
G What time is the contest?
H What does the farmer give Henry?
J How much salt does the fisherman bring?

19 Based on paragraph 11, which of these would Henry MOST likely do next?

A Get rid of the mice
B Fix the leak in his roof
C Buy more flour and salt
D Share the pretzel he baked

20 The woodsman, the farmer, and the fisherman are alike because they all —

F have the same troubles as Henry
G want Henry to win the contest
H enjoy making pretzels
J work near the sea

21 What is Henry's biggest problem?

A The salt is wet.
B He has little time.
C He needs more wood.
D The flour is half gone.

22 Which of these is MOST important to Henry?

F Having good friends
G Being prepared
H Making fine pretzels
J Winning contests

23 The main reason to read this story is to —

A learn how to make pretzel dough
B find out how to enter a contest
C discover how to become a baker
D understand how kindness helps others

24 Which two words from the story have the same meaning?

F problems, troubles
G late, fast
H judges, friends
J gathered, made

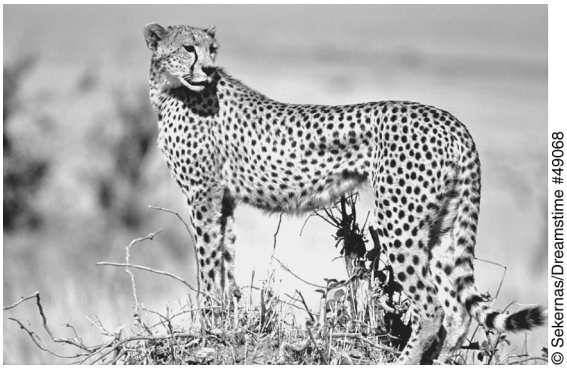
Do not turn the page until you are told.

STOP

Directions: Read the article and answer the questions that follow.

Speedy and Spotty

1 Imagine you are in Africa. Suddenly, a group of spots streaks past you. What was it? It may have been a cheetah, the fastest animal on land. It can run up to 70 miles per hour, which is faster than most cars travel on the highway!



© Sekernas/Dreamstime #49068

A Fast Cat

2 In many ways, the cheetah is built for speed. Even though this animal is a cat, its paws are much more like a dog's paws. The paws allow the cheetah to grip the ground when it makes quick turns. A cheetah also has long legs that help it take big steps. It can jump as far as 20 feet in one leap! Even the cheetah's backbone helps it move quickly. Its backbone twists and turns, letting the cheetah zigzag across the ground easily. The backbone acts as a spring, moving the cheetah forward with sudden bursts of energy. Although the cheetah can run fast, it cannot run for long distances. It uses its energy quickly and becomes tired. If the cheetah cannot catch its dinner in a hurry, it will have to rest awhile before trying again.

Made to Hunt

3 A cheetah is also made to be a great hunter. It has sharp eyesight. A cheetah can see other animals up to three miles away. Good eyesight helps the cheetah find its prey so it can plan an attack. A cheetah's coat is also very useful. The coat is tan with black spots. This coloring allows a cheetah to blend in with the tall, brown grass in Africa. Other animals do not see it hiding, so a cheetah can sneak up on rabbits, birds, and other animals.

Saving the Cheetah

4 Today there are many threats to the cheetah. Parts of Africa are being turned into farms and ranches. This change forces the cheetah and other animals to find new places to live, which is not always easy. Cheetahs are also being hunted by other animals such as lions and hyenas. However, zookeepers and wildlife experts are trying to save the cheetah. Maybe with their help, cheetahs will grow larger in number.

25 What is the meaning of <u>streaks</u> in paragraph 1?

A searches for food
B lives in a large group
C moves with great speed
D makes marks in the dirt

26 Read this dictionary entry.

sharp (shärp) *adj*. **1.** Having an edge. **2.** Sudden. **3.** Fierce. **4.** Better than usual.

Which meaning of <u>sharp</u> is used in paragraph 3?

F 1
G 2
H 3
J 4

27 The cheetah's coat is MOST useful because it —

A keeps the cheetah cool after a long run
B lets the cheetah move with great speed
C helps the cheetah hide in the grass
D protects the cheetah from the sun

28 Farmers are a problem for cheetahs because they have —

F forced cheetahs to find new places to live
G moved other animals near the cheetahs
H caught cheetahs and sent them to zoos
J asked hunters to trap cheetahs

29 A cheetah's backbone is like a spring because of the —

A shape
B size
C way it moves
D way it feels

30 Read this chart.

When:		Then:
Cheetahs use their energy very quickly.	→	Cheetahs stop to rest if they do not catch their prey.
Lions and hyenas hunt cheetahs.	→	

The chart shows some information from the article. Which of these belongs in the empty box?

F The number of cheetahs in Africa becomes smaller.
G Zookeepers start catching cheetahs.
H Ranchers ask wildlife experts for help to find new land.
J People in Africa hunt lions and hyenas.

31 Animal experts in Africa will MOST likely —

A send cheetahs to zoos when they bother ranchers
B teach cheetahs to stay away from lions and hyenas
C pay farmers to grow extra crops to feed cheetahs
D find ways to set aside land where cheetahs can be safe

32 One reason that "Speedy and Spotty" is a good title for this article is because it —

F gives the names of two cheetahs
G describes two facts about cheetahs
H uses silly words to tell about cheetahs
J explains how cheetahs act in the wild

33 This article would be MOST useful to a student who wants to —

A understand facts about cheetahs in Africa
B find out how many cheetahs live in zoos
C learn ways to save cheetahs from other animals
D know how a cheetah is like other African animals

You do not need to read a passage to answer the following questions. Read and answer the questions.

34 Which is the correct way to show <u>we are</u> as one word?

F we're
G wer'e
H wear'e
J wea're

35 Which group of words is listed in alphabetical order?

A paper, past, pail, pants
B pants, paper, past, pail
C pail, pants, paper, past
D past, pail, pants, paper

STOP

Answer Key-3060-R0110

Test Sequence Number	Correct Answer	Reporting Category	Reporting Category Description
1	D	002	Demonstrate comprehension of printed materials
2	J	002	Demonstrate comprehension of printed materials
3	C	002	Demonstrate comprehension of printed materials
4	F	002	Demonstrate comprehension of printed materials
5	C	002	Demonstrate comprehension of printed materials
6	H	002	Demonstrate comprehension of printed materials
7	B	002	Demonstrate comprehension of printed materials
8	F	002	Demonstrate comprehension of printed materials
9	B	001	Use word analysis strategies and information resources
10	G	001	Use word analysis strategies and information resources
11	C	001	Use word analysis strategies and information resources
12	J	002	Demonstrate comprehension of printed materials
13	C	002	Demonstrate comprehension of printed materials
14	F	002	Demonstrate comprehension of printed materials
15	C	002	Demonstrate comprehension of printed materials
16	F	002	Demonstrate comprehension of printed materials
17	D	002	Demonstrate comprehension of printed materials
18	H	002	Demonstrate comprehension of printed materials
19	D	002	Demonstrate comprehension of printed materials
20	G	002	Demonstrate comprehension of printed materials
21	B	002	Demonstrate comprehension of printed materials
22	F	002	Demonstrate comprehension of printed materials
23	D	002	Demonstrate comprehension of printed materials
24	F	001	Use word analysis strategies and information resources
25	C	001	Use word analysis strategies and information resources
26	J	001	Use word analysis strategies and information resources
27	C	002	Demonstrate comprehension of printed materials
28	F	002	Demonstrate comprehension of printed materials
29	C	002	Demonstrate comprehension of printed materials
30	F	002	Demonstrate comprehension of printed materials
31	D	002	Demonstrate comprehension of printed materials
32	G	002	Demonstrate comprehension of printed materials
33	A	002	Demonstrate comprehension of printed materials
34	F	001	Use word analysis strategies and information resources
35	C	001	Use word analysis strategies and information resources

Grade 3 Reading, Core 1

If you get this many items correct:		Then your converted scale score is:
0		000
1		96
2		144
3		173
4		194
5		212
6		226
7		240
8		252
9		263
10		273
11		283
12		292
13		301
14		310
15		319
16		327
17		336
18		344
19		353
20		362
21		370
22		379
23		389
24		398
25		**408**
26		419
27		430
28		443
29		456
30		472
31		490
32		**512**
33		542
34		590
35		600

A total raw score (left column) is converted to a total scaled score (right column). The total scaled score may range from 0 to 600.

A scaled score of 400 or more means the student passed the SOL test, while a scaled score of 399 or less means the student did not pass the test. A scaled score of 500 or more indicates the student passed the SOL test at an advanced level.

Appendix D

Statistical Analysis Performed on the SOL Student-Level Data

This appendix provides a more technical explanation of the statistical methods and analysis results that were used to identify the factors associated with student performance on the third grade reading SOL test.

THE DATASET

JLARC staff analyzed a dataset provided by the Virginia Department of Education (DOE) consisting of the population of 87,360 third grade students' Standards of Learning (SOL) reading scaled test scores from the spring of 2010. In the spring of each year, virtually all third graders (among students in other grades as well) take SOL tests, which includes a reading test to assess whether the student is reading at grade level. The dataset also contains unique independent variables for each of the 87,360 students in the dataset, which were used in the correlation and regression analyses conducted by JLARC staff. In addition to the 2010 dataset, DOE also provided JLARC staff with student-level datasets containing the 2008 and 2009 reading SOL test results for all third grade students.

Dependent Variables

Two dependent variables were used for measuring the reading performance of third grade students: (1) the SOL reading test scaled score and (2) a binary variable for whether or not a student passed the SOL reading test (passed=1 if the SOL scaled score was 400 or greater). (Scaled scores range from 0 to 600.)

Independent Variables

Six types of student-level variables were included as independent variables in the regression analysis (Table D-1), which are described in more detail below.

Economically Disadvantaged Status.

According to DOE, students are identified as economically disadvantaged if at any point in the school year they (1) are eligible for Free/Reduced Meals, or (2) receive Temporary Assistance for Needy Families (TANF), or (3) are eligible for Medicaid, or (4) are identified as experiencing homelessness. Therefore, this variable was coded as 0 (not identified as economically disadvantaged) or 1 (identified as economically disadvantaged).

Table D-1: Independent Variables Included in Student-Level SOL Test Dataset Provided by DOE

Student-Level Variable	Value
Economically Disadvantaged	Yes/No
Disability Status	14 categories *(see below)*
Race	7 categories *(see below)*
Limited English Proficiency (LEP)	Yes/No
Gender	Male/Female
Date of birth	Month and Year

Source: Data provided by the Virginia Department of Education.

Of the 87,360 third graders that took the SOL reading test in 2010, 33,442 (38 percent) were characterized as economically disadvantaged.

Disabilities.

Students who were characterized as having a disability that may affect their reading ability were in one of 14 categories (Table D-2). Students placed in 13 of the disability categories may receive special education services under the federal Individual with Disabilities Education Act (IDEA). In contrast, the "504" in "504 plan" refers to Section 504 of the federal Rehabilitation Act of 1973. Usually, general education students with special needs who do not qualify for special education services under IDEA may qualify for a program of instructional services, accommodations, or modifications under Section 504 and under the Americans with Disabilities Act.

Table D-2: Disability Categories Included in Student-Level SOL Test Dataset Provided by DOE

Disability Type	Number of Third Grade Students With Disability
Speech-language impairment	3,154
Specific learning disabilities	2,842
Other health impairment	1,618
504 plan	844
Autism spectrum disorders	459
Emotional disturbance	432
Developmental delay	165
Hearing impairment	70
Intellectual disability	58
Orthopedic impairment	47
Multiple disabilities	46
Visual impairment	38
Mental retardation*	37
Traumatic brain injury	9
TOTAL	***9,819***

* Redefined as "intellectual disability" effective July 2009.
Source: JLARC staff analysis of 2010 SOL data provided by the Virginia Department of Education.

Further information on these specific disabilities is available on the Virginia Department of Education (DOE) website http://www.doe.virginia.gov/special_ed/disabilities/index.shtml, in the DOE document *Regulations Governing Special Education Programs for Children with Disabilities in Virginia,* and in http://www.doe.virginia.gov/special_ed/tech_asst_prof_dev/section_504_implementation_va.pdf.

For data analysis purposes, each one of these 14 categories was treated as a binary (0/1) variable for each student (assigning a value of 1 if the student was characterized as having the type of disability). Out of 87,360 third graders in the 2010 dataset, 9,819 students had one of the 14 types of disabilities. Of the students with at least one disability, 4,427 were also economically disadvantaged.

Race.

The 2010 student-level SOL dataset included the following binary race variables (the number of students in each category appears in brackets):

- White [50,087]
- Black [21,603]
- Hispanic [7,201]
- Asian [5,215]
- Other [3,254]

(The "other" category includes 263 American Indian students, 132 Hawaiian students, and 2,859 students with an "unspecified" race value.) For data analysis purposes, each of these five race categories was treated as a binary (0/1) variable for each student.

Limited English Proficiency (LEP) Status.

A person who is unable to communicate effectively in English because he/she was not born in the United States and his/her primary language is not English is defined by the federal government and the Commonwealth of Virginia as having a Limited English Proficiency (LEP) status. Persons with an LEP status were assigned a value of 1 in the SOL dataset; those without it were assigned a value of 0. Of the 87,360 third graders in the dataset, 8,039 had an LEP status (9 percent of all third grade students).

Gender.

Exactly 43,381 of the 87,360 third graders were female (50 percent). This binary variable was represented with a 1 for females and a 0 for males.

Age.

The SOL dataset provided by DOE also included each student's date of birth (month and year). This variable was used to calculate the age of each student when the SOL reading test was administered (using May of 2008, 2009, or 2010 as the test administration date). In addition to using each student's age as an independent variable in the analysis, JLARC staff also created an age group variable, which resulted in additional binary (0/1) variables (based on the age of each student) that were included in the regression analysis.

STATISTICAL ANALYSES USED: CORRELATION AND REGRESSION

JLARC staff used two primary statistical techniques for analyzing the population of third grade students: bivariate correlation analysis and a multivariate regression analysis. Exhibit D-1 provides a definition of these two methods.

Using bivariate correlation analysis, JLARC staff explored the relationships between student performance on the third grade SOL reading test and more than 70 variables. Several of the variables examined were correlated with student performance on the SOL reading test, either positively or negatively. In addition, correlations were stronger when the student-level data was aggregated to the school and division levels. Figure D-1 shows the relationships that exist between student performance on the third grade SOL reading test and some of the variables that appear to have an effect on student performance, and for which statewide data were available.

While correlation analysis is helpful in identifying which variables are associated with student performance on the third grade reading SOL test, its results do not provide a complete picture if more than one variable is associated with student performance on the third grade reading SOL test. Accordingly, the use of a more elaborate statistical technique – multivariate regression analysis – is necessary to identify which combinations of factors are the best indicators of reading performance among third grade students in Virginia. This statistical technique takes into account simultaneously the associations of several variables and should identify the independent effect of each variable on student performance on the third grade reading SOL test by controlling for the other factors. As discussed above, various independent variables were used in the regression analysis to estimate or predict the probability of third grade students passing the reading SOL test if the students performed at an average level given the characteristics of the student, their school, and their school division. These predictions serve as an indicator of the extent of the challenges a student,

school, and division may face in order to reach a high SOL pass rate or test score. Performance above the predicted values may be viewed as above average performance relative to the various factors, whereas performance below the predicted values may be viewed as below average performance relative to these factors.

Exhibit D-1: Statistical Analyses Used to Identify Factors Associated with Student Performance on the Third Grade Reading SOL Test

Correlation Analysis

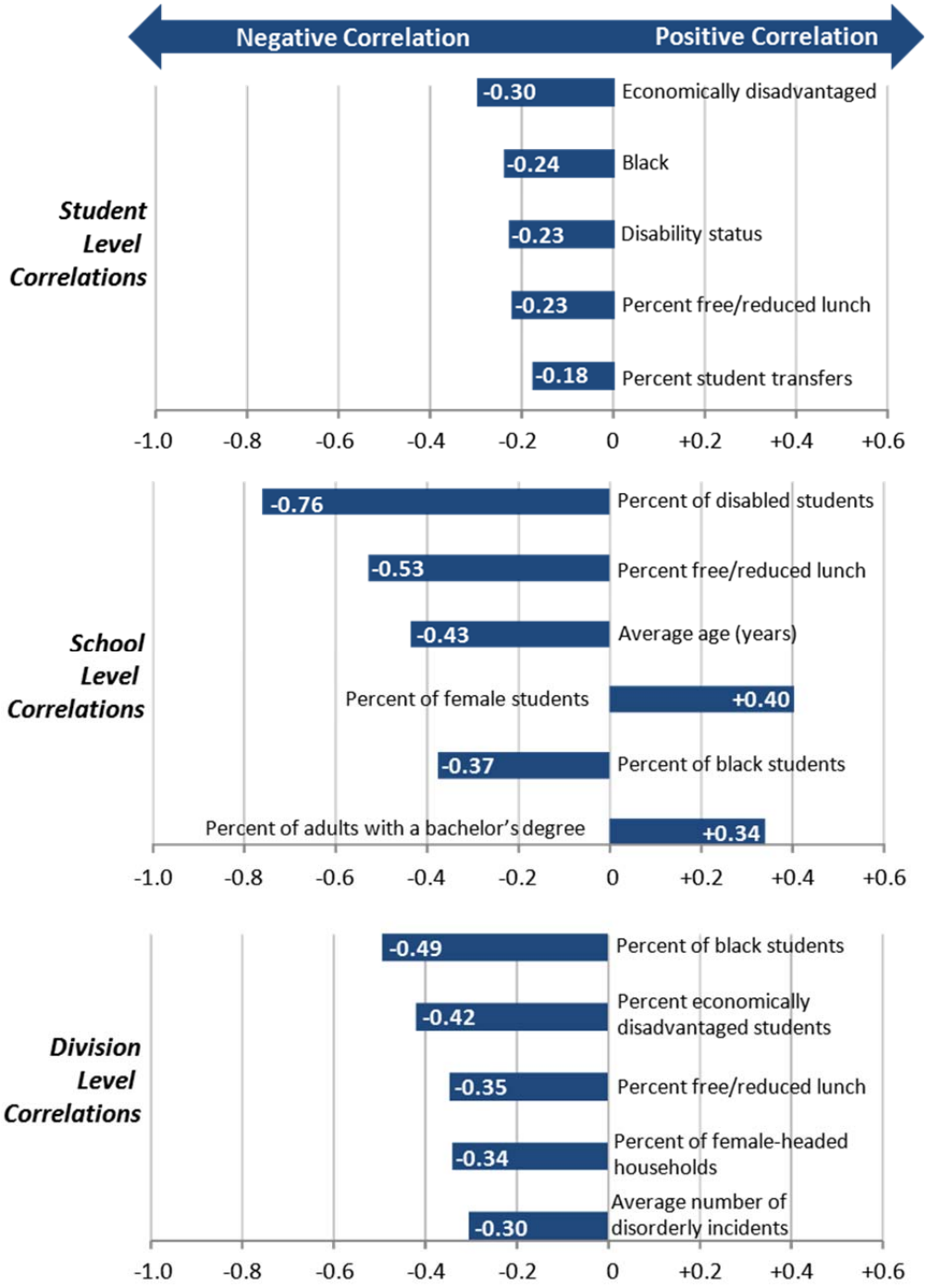
Correlation analysis is a standard statistical technique which measures the strength and direction of the relationship between two variables. It can be used to measure the relationship between all possible pairings of the factors being analyzed. It can show whether there is a positive relationship between the variables (as one variable increases, the other variable increases); whether there is a negative or inverse relationship between the variables (as one variable increases, the other variable decreases); or whether there is no measurable relationship between the two variables. It can also show the strength of the relationship between two variables through its correlation coefficient. The correlation coefficient ranges from –1 to 1. A correlation coefficient close to 0 indicates a lack of relationship between two variables. The closer the correlation coefficient is to -1 or 1, the stronger the relationship. The stronger the relationship, the larger the difference that can be expected in one variable when the other variable takes extreme values. Accordingly, a positive association between student performance on the SOL reading test and a variable suggests that a higher level of the variable is likely to coincide with higher student performance on the SOL reading test. Conversely, a negative association with test scores indicates that a higher level of the variable will likely correspond with lower student performance on the SOL reading test.

Regression Analysis

Regression analysis is a widely accepted statistical technique for assessing the extent to which various factors (also known as independent variables) help to explain the variation in a variable of interest (the dependent variable). In this particular analysis, SOL pass rates and test scores serve as the dependent variables, or the variables that the analysis is seeking to explain. An example of an independent variable that might help explain the variation in schools' or divisions' SOL pass rates on the SOL reading test is the percentage of students identified as economically disadvantaged. The percentage of economically disadvantaged students is an independent variable because its magnitude does not depend upon SOL pass rates or test scores. The hypothesis is that other factors being equal, such as having the same demographic and other socioeconomic characteristics, schools or divisions with a higher percentage of economically disadvantaged students would likely have a lower SOL pass rate or average SOL test score. Regression analysis is a way of testing whether or not such a pattern actually appears in the data. In addition, regression analysis produces an equation which best summarizes how the independent variables predict increases or decreases in the dependent variable. The equation contains coefficients for each independent variable that indicate how much the dependent variable may increase or decrease in association with the changes in the independent variable. Standardized estimates of these coefficients can also be calculated in order to compare the relative strength of each independent variable within one or across multiple regression model(s). The closer to –1 or 1 a standardized estimate is, the stronger the association between the independent and dependent variables. In addition to the equation that is produced, regression analysis also provides a measure of the strength of the relationship between the dependent variable and the independent variables included in the regression model. This measure is designated as the R-square, a statistic which can range from zero to one. The statistic indicates the percentage of the variation in the dependent variable which can be explained by the independent variables, based on the regression equation. For example, if a regression equation explaining SOL pass rates based on the percent of economically disadvantaged students has an R-square of 0.35, it means that this independent variable (percent of economically disadvantaged students) accounts for 35 percent of the variation that can be observed in the dependent variable (SOL pass rates).

When the dependent variable in the analysis is a binary (0/1) variable, logistic regression analysis is used to predict the probability of occurrence of an event. Like many forms of regression analysis, logistic regression makes use of several predictor variables that may be either numerical or categorical. In this study, the logistic regression computes an estimated probability of passing the third grade SOL reading test for each student based on the independent variables included in the regression model.

Figure D-1: Correlations of Factors Associated With Student Performance on the Third Grade Reading SOL Test



Source: JLARC staff analysis of 2010 SOL data provided by the Virginia Department of Education.

TECHNICAL DETAILS OF THE REGRESSION MODELS

As described in Chapter 3, JLARC staff performed regression analyses at the student, school, and division levels to identify the demographic and socioeconomic factors that are most associated with high pass rates and test scores on the third grade SOL reading test, as well as those factors that explain the most variation in student performance on the test. Appendix B includes a list of the variables included in the analysis. Each regression analysis resulted in a final model that produced a predicted pass rate for each student, school, or division based on the factors included in the model that explained the most variation in student performance on the SOL reading test. (Exhibits D-2, D-3, and D-4 below list the variables included in each final model.) The student- and school-level predicted pass rates were then aggregated by division. (A weight was applied for each school based on the number of students in the school and corresponding division). Subsequently, divisions were ranked based on (1) their actual pass rate, (2) their average predicted pass rate, and (3) the difference between their actual and average predicted pass rates.

In the student-level regression model, the baseline against which all other groups were compared was made up of white male third grade students with no economic disadvantages, no disabilities, and no limitations in English proficiency. There were 16,360 of these students in the 2010 SOL dataset. [Two additional non-binary variables were also included in the student-level regression model: the student's age (in years) and the percent of student transfers during the school year (a school-level measure of student mobility).]

As noted above, two dependent variables were used for measuring the reading performance of third grade students: (1) a binary variable for whether or not a student passed the SOL reading test (passed=1) and (2) the SOL reading test scaled score. First, JLARC staff conducted an ordinary least squares (OLS) regression analysis to identify the factors that explained the most variation in reading performance of third grade students. Subsequently, JLARC staff performed a logistic regression analysis, which is used when the dependent variable in the analysis is a binary (0/1) variable. The logistic regression analysis computed an estimated probability of passing the SOL reading test for each student based on the independent variables included in the regression model. (These results are presented in the report.) For purposes of interpreting the regression results, Exhibit D-2 includes the parameter estimates, standard errors, and standardized estimates based on SOL reading test scaled score as the dependent variable. On average, the baseline students mentioned above (white male third

Exhibit D-2: Student-Level Regression Model

Ordinary Least Squares Regression Results			
Dependent Variable	SOL scaled score		
Number of Observations (students)	87,360		
R-Square	0.1797		
Variable	**Parameter Estimate**	**Standard Error**	**Standardized Estimate**
Intercept	569.53	5.56	0.000
Economically disadvantaged status	-31.96	0.55	-0.198
Specific learning disabilities	-68.34	1.38	-0.154
Other health impairment	-66.99	1.80	-0.115
Autism spectrum disorder	-70.90	3.37	-0.065
Developmental delay	-73.01	5.66	-0.040
Emotional disturbance	-61.09	3.66	-0.051
Speech-language impairment	-23.99	1.29	-0.057
Black	-30.10	0.62	-0.166
Limited English Proficiency status	-27.85	0.86	-0.103
Age of student (years)	-6.64	0.60	-0.035
Percent of student transfers (by school)	-0.87	0.04	-0.065
Female	8.21	0.49	0.052

Ordinary Least Squares Regression Results			
Dependent Variable	Passed (0 or 1)		
Number of Observations (students)	87,360		
R-Square	0.1112		
Variable	**Parameter Estimate**	**Standard Error**	**Standardized Estimate**
Intercept	1.31	0.03	0.0000
Economically disadvantaged status	-0.10	0.00	-0.1327
Specific learning disabilities	-0.30	0.01	-0.1396
Other health impairment	-0.28	0.01	-0.0988
Autism spectrum disorder	-0.29	0.02	-0.0554
Developmental delay	-0.33	0.03	-0.0372
Emotional disturbance	-0.27	0.02	-0.0474
Speech-language impairment	-0.11	0.01	-0.0552
Black	-0.12	0.00	-0.1365
Limited English Proficiency status	-0.09	0.00	-0.0723
Age of student (years)	-0.04	0.00	-0.0426
Percent of student transfers (by school)	0.00	0.00	-0.0458
Female	0.02	0.00	0.0286

Notes: These regression model only include the disability types with at least 100 students. Table B-2 in Appendix B includes the number of students by disability type. Also, black is the only race variable listed above because among the five student-level race categories (black, white, Hispanic, Asian, and other), black had the strongest association with student performance on the third grade reading SOL test.

Source: JLARC staff analysis of 2010 SOL data provided by the Virginia Department of Education.

grade students with no economic disadvantages, no disabilities, and no limitations in English proficiency) had a scaled score of 503 on the reading SOL test. In comparison, the regression coefficients indicate that, on average, persons categorized as economically disadvantaged scored approximately 32 points lower, persons categorized as having specific learning disabilities scored 68 points lower, and persons categorized as having Limited English Proficiency (LEP) scored 28 points lower. If a student fell into more than one of these categories, then the regression model computed a predicted or expected SOL scaled score for each student using the corresponding coefficients for all applicable variables.

There are two reasons why the student-level regression model estimated regression coefficients are believable. First, the estimated parameters were based on the entire population of interest (all 87,360 third graders who took the SOL test in 2010) rather than from a smaller sample. As a result, there is no need to infer statistical results of a sample to a broader population, and statistical tests of significance are not meaningful because the dataset being analyzed is a population (all third grade students who took the SOL test in 2010). This condition is why the t-test value and corresponding probability value for each parameter estimate are not included in Exhibit D-2. There is no need to estimate confidence intervals for the parameters that take sampling error into account, because there is no sampling error in this case.

The second reason has to do with the relatively small size of each coefficient estimate's standard error. The standard error is a measure of the standard deviation (or the variability) of the regression coefficient estimate. In essence, it measures how sensitive the parameter estimate is to changes in a few observations. If the absolute size of the standard error approached that of the coefficient estimate, that situation would indicate that the parameter estimate may be unstable. However, Exhibit D-2 shows that the absolute size of the standard errors are considerably smaller (in most cases, by a factor of 10 or more) compared to that of the parameter estimate. As a result, the estimated regression coefficients do not appear to be sensitive to changes in a few observations.

However, when observing the R-square in Exhibit D-2, the independent variables explain about 18 percent of the total variation in third-graders' SOL reading test scores, a substantially lesser percentage than is explained by the school level and division level models. This is because the student-level regression model summarizes, on average, the differences between groups of students, but there is considerable variation in individual student test scores within each group. For example, among students receiving special education services for specific learning disabilities, the average test score was about 404. There was some variation in the average

test scores of students with specific learning disabilities who were also classified as LEP status or as economically disadvantaged, but there were some in those sub-groups who received perfect test scores of 600, and some who scored below 200. In other words, the regression model attempts to draw lines through a scatterplot of the student-level data that take into account the effects of independent factors based on an average group of third grade students. Although the regression model cannot accurately predict every single student's SOL reading test score within each group, the average trends reflected in the regression model appear to be quite strong based on the results presented in Exhibit D-2. Exhibits D-3 and D-4 present the regression results for the school-level and division-level models, both of which have an R-square of approximately 50 percent. This result indicates that the independent variables in each model explain about half of the total variation in third-graders' SOL reading test scores, on average.

Exhibit D-3: School-Level Regression Model

Ordinary Least Squares Regression Results				
Dependent Variable	Average SOL scaled score			
Number of Observations (schools)	1,137			
R-Square	0.4961			
Variable		**Parameter Estimate**	**Standard Error**	**Standardized Estimate**
Intercept		482.97	5.00	0.0000
Percent of economically disadvantaged third grade students		-42.68	3.96	-0.4038
Percent of black third grade students		-27.63	3.00	-0.2789
Percent of adults with a bachelor's degree		25.45	5.70	0.1586
Percent of third grade students with a Limited English Proficiency		-38.28	5.69	-0.2175
Percent of female third grade students		30.54	8.39	0.0773
Percent of third grade students with a more severe disability		-50.65	11.87	-0.0926

Ordinary Least Squares Regression Results				
Dependent Variable	Pass rate (percent passed)			
Number of Observations (schools)	1,137			
R-Square	0.3908			
Variable		**Parameter Estimate**	**Standard Error**	**Standardized Estimate**
Intercept		0.86	0.02	0.0000
Percent of economically disadvantaged third grade students		-0.11	0.02	-0.2647
Percent of black third grade students		-0.14	0.01	-0.3600
Percent of adults with a bachelor's degree		0.06	0.02	0.0996
Percent of third grade students with a Limited English Proficiency		-0.16	0.02	-0.2280
Percent of female third grade students		0.10	0.04	0.0665
Percent of third grade students with a more severe disability		-0.22	0.05	-0.1023

Source: JLARC staff analysis of 2010 SOL data provided by the Virginia Department of Education.

Exhibit D-4: Division-Level Regression Model

Ordinary Least Squares Regression Results				
Dependent Variable	Average SOL scaled score			
Number of Observations (divisions)	132			
R-Square	0.4940			
Variable		**Parameter Estimate**	**Standard Error**	**Standardized Estimate**
Intercept		444.65	17.79	0.0000
Percent of third grade students with a Limited English Proficiency		-56.22	17.01	-0.2607
Percent of black third grade students		-38.51	6.95	-0.4970
Percent of adults with a bachelor's degree		69.90	14.42	0.4841
Percent of economically disadvantaged third grade students		-2.30	11.37	-0.0224
Percent of third grade students with a more severe disability		-54.51	41.66	-0.0884
Percent of female third grade students		51.22	33.63	0.0991

Ordinary Least Squares Regression Results				
Dependent Variable	Pass rate (percent passed)			
Number of Observations (divisions)	132			
R-Square	0.3475			
Variable		**Parameter Estimate**	**Standard Error**	**Standardized Estimate**
Intercept		0.72	0.09	0.0000
Percent of third grade students with a Limited English Proficiency		-0.29	0.08	-0.3081
Percent of black third grade students		-0.18	0.03	-0.5384
Percent of adults with a bachelor's degree		0.21	0.07	0.3353
Percent of economically disadvantaged third grade students		0.03	0.06	0.0696
Percent of third grade students with a more severe disability		-0.43	0.21	-0.1577
Percent of female third grade students		0.21	0.17	0.0930

Source: JLARC staff analysis of 2010 SOL data provided by the Virginia Department of Education.

Table D-3 includes the odds ratio estimates, which are results from the student-level logistic regression analysis that was conducted with passed (0 or 1) as the dependent variable. An odds ratio is the ratio of the odds of an event occurring in one group to the odds of it occurring in another group. For example, the odds of a non-economically disadvantaged student passing the SOL reading test are 2.131 times greater than the odds of an economically disadvantaged student. For non-black students, the odds of passing the SOL reading test are 2.218 times greater than the odds for black students.

Table D-3: Student-Level Logistic Regression Results (Odds Ratio Estimates)

***Dependent variable* = *Passed* (0 or 1)**

Variable	Odds Ratio Estimate
Autism spectrum disorders	5.606
Developmental delay	5.095
Specific learning disabilities	4.913
Other health impairment	4.639
Emotional disturbance	4.240
Black	2.218
Economically Disadvantaged status	2.131
Speech-language impairment	2.130
Limited English Proficiency status	2.000
Percent of student transfers (by school)	0.978
Female	0.839
Age of student (years)	0.775

Note: This regression model only includes the disability types with at least 100 students.
Source: JLARC staff analysis of 2010 SOL data provided by the Department of Education.

Appendix E

Division-Level Pass Rates and Rankings, 2010 Third Grade Reading SOL Test

Senate Joint Resolution 31 requires a ranking of school divisions based on the pass rates for the most recent third grade reading test, which during the research phase of the study was the spring 2010 SOL test. Table E-1 shows the actual pass rates of the divisions and compares these pass rates to the rates that might be expected or "predicted" based on the socioeconomic or demographic characteristics of the division's population of third grade students in 2010. The first two data columns (under the heading "Actual Performance") show the actual SOL pass rate of the school division and the rank that this pass rate represents among the divisions. For example, Botetourt's pass rate shown in the first data column is 90.96 percent. As indicated in the second column of data, in 2010 this percentage ranked 7th among the divisions.

The next two data columns (under the heading "Predicted Pass Rate") address the SOL pass rates for the divisions that are predicted by regression models which look at the characteristics of the school divisions and their students, such as socioeconomic factors. (Regression models used are discussed in Appendix D.) The predicted pass rate is the pass rate which the division would achieve, based on the models, if the students performed at an average level relative to the performance of students with similar demographic characteristics in the other divisions. As indicated in the third data column, for example, Botetourt would be predicted to achieve a pass rate of 85.73 percent based on the characteristics of its third grade students in 2010. This is among the higher pass rates predicted among the divisions, ranking the division 21st (see data column 4). This is an indicator of the extent of the challenge which Botetourt faces in obtaining a high pass rate.

The last two data columns (under the heading "Difference in Actual Versus Predicted Pass Rate") show how the actual performance by the division compares to the performance that is predicted by division characteristics. Divisions with students passing at a higher rate than predicted have a positive difference, while divisions with students passing at a lower rate than predicted have a negative difference. As seen in the table, Botetourt's actual pass rate of 90.96 exceeded its predicted pass rate of 85.73 by 5.23 percentage points. On this indicator, the division ranked 20th, meaning that Botetourt exceeded its predicted pass rate by the 20th largest positive difference among all school divisions. It was difficult for the division to rank much more highly than this on this measure for exceeding expectations, as its expected pass rate was among the higher rates.

Table E-1
2010 Third Grade Reading SOLs: Student Pass Rates and Extent of Challenge, Division-Level Data and Rankings

School Division	Actual Performance: SOL Pass Rate Results (rank 1 = strongest performance) (rank 132 = weakest performance		Predicted Pass Rate (rank 1 = highest predicted; least challenged) (rank 132 = lowest predicted; most challenged)		Difference in Actual Versus Predicted Pass Rate (rank 1 = strongest performance) (rank 132 = weakest performance)	
	Percent	Rank	Percent	Rank	Difference	Rank
Accomack County	75.24	105	78.40	101	-3.17	96
Albemarle County	86.51	30	87.06	7	-0.54	71
Alexandria City	74.33	108	78.48	100	-4.15	100
Alleghany County	77.00	99	83.28	54	-6.28	109
Amelia County	82.00	74	80.54	87	1.46	49
Amherst County	86.90	25	80.89	83	6.01	15
Appomattox County	84.97	41	80.85	84	4.11	29
Arlington County	88.04	19	85.28	26	2.76	38
Augusta County	86.68	28	86.54	11	0.15	65
Bath County	76.74	101	86.56	10	-9.82	121
Bedford County	79.67	85	86.53	12	-6.86	111
Bland County	82.43	67	84.92	32	-2.49	89
Botetourt County	90.96	7	85.73	21	5.23	20
Bristol City	83.43	54	82.05	70	1.38	51
Brunswick County	72.66	112	70.73	129	1.93	44
Buchanan County	77.88	94	83.30	53	-5.43	106
Buckingham County	90.68	8	79.43	96	11.24	3
Buena Vista City	65.69	125	85.41	25	-19.73	132
Campbell County	79.28	87	83.72	49	-4.44	101
Caroline County	79.55	86	79.82	93	-0.27	68
Carroll County	84.47	45	82.91	63	1.55	48
Charles City County	54.55	132	74.25	119	-19.71	131
Charlotte County	89.34	12	80.39	88	8.96	5
Charlottesville City	84.15	47	77.92	102	6.24	14
Chesapeake City	82.63	63	81.07	82	1.56	47
Chesterfield County	86.24	33	83.13	59	3.11	35
Clarke County	76.88	100	86.13	16	-9.25	119
Colonial Beach	84.62	44	80.02	91	4.60	25
Colonial Heights City	85.31	39	81.28	78	4.03	30
Covington City	72.50	113	80.06	90	-7.56	114
Craig County	86.89	26	86.09	17	0.80	56
Culpeper County	81.63	76	83.67	50	-2.04	85
Cumberland County	77.27	97	76.87	109	0.41	61
Danville City	82.78	60	72.82	126	9.96	4
Dickenson County	78.88	89	81.51	76	-2.63	91
Dinwiddie County	82.03	72	78.85	99	3.18	34
Essex County	61.91	129	75.12	115	-13.21	128
Fairfax County	86.13	35	85.01	30	1.12	53
Falls Church City	91.61	4	91.06	1	0.55	59
Fauquier County	86.30	31	85.63	24	0.67	57
Floyd County	85.90	38	84.91	33	0.99	54
Fluvanna County	70.40	119	83.97	45	-13.57	129
Franklin City	73.33	111	70.63	130	2.71	39
Franklin County	89.31	13	82.10	69	7.21	12
Frederick County	77.44	96	85.64	23	-8.20	117
Fredericksburg City	72.09	115	75.77	114	-3.68	98
Galax City	91.25	6	82.46	67	8.79	6
Giles County	80.48	84	86.04	18	-5.56	107
Gloucester County	86.09	37	85.13	28	0.96	55
Goochland County	80.88	82	81.18	79	-0.30	69
Grayson County	87.10	24	82.50	66	4.60	26

Table E-1 (continued)						
School Division	Actual Performance: SOL Pass Rate Results (rank 1 = strongest performance) (rank 132 = weakest performance		Predicted Pass Rate (rank 1 = highest predicted; least challenged) (rank 132 = lowest predicted; most challenged)		Difference in Actual Versus Predicted Pass Rate (rank 1 = strongest performance) (rank 132 = weakest performance)	
	Percent	Rank	Percent	Rank	Difference	Rank
Greene County	70.05	120	82.60	65	-12.56	127
Greensville County	71.29	118	73.90	123	-2.61	90
Halifax County	84.82	42	79.11	97	5.71	17
Hampton City	69.81	121	73.22	125	-3.41	97
Hanover County	91.44	5	86.61	8	4.83	22
Harrisonburg City	80.58	83	77.39	104	3.18	33
Henrico County	84.10	49	81.09	81	3.01	36
Henry County	88.05	18	80.68	86	7.38	10
Highland County	92.86	3	84.49	40	8.37	7
Hopewell City	67.00	123	74.58	117	-7.58	115
Isle of Wight County	86.56	29	81.58	75	4.98	21
King George County	80.94	81	83.79	48	-2.85	93
King William County	82.58	65	83.40	52	-0.81	75
King and Queen County	83.67	52	76.66	110	7.02	13
Lancaster County	87.26	23	79.91	92	7.34	11
Lee County	77.01	98	81.10	80	-4.09	99
Lexington City	90.32	9	90.55	2	-0.22	67
Loudoun County	89.26	14	89.08	4	0.17	64
Louisa County	82.54	66	83.17	58	-0.62	73
Lunenburg County	82.31	69	79.63	94	2.68	40
Lynchburg City	74.33	107	77.14	107	-2.81	92
Madison County	82.17	71	84.17	43	-2.00	84
Manassas City	64.81	126	73.99	122	-9.18	118
Manassas Park City	76.03	103	76.65	111	-0.62	72
Martinsville City	89.94	10	72.68	127	17.26	1
Mathews County	83.16	57	83.07	60	0.09	66
Mecklenburg County	83.78	51	79.07	98	4.72	24
Middlesex County	87.76	22	83.82	47	3.93	31
Montgomery County	82.65	62	87.68	6	-5.03	104
Nelson County	84.11	48	81.80	74	2.31	41
New Kent County	83.33	56	85.23	27	-1.90	82
Newport News City	73.58	110	74.85	116	-1.27	78
Norfolk City	71.80	116	74.11	120	-2.31	88
Northampton County	62.07	128	74.55	118	-12.48	126
Northumberland County	88.89	15	80.70	85	8.19	8
Norton City	75.86	104	83.04	61	-7.18	113
Nottoway County	83.33	55	77.76	103	5.57	18
Orange County	89.57	11	84.07	44	5.50	19
Page County	77.78	95	84.88	34	-7.10	112
Patrick County	95.40	1	81.87	73	13.53	2
Petersburg City	59.88	131	69.98	132	-10.10	122
Pittsylvania County	86.71	27	81.97	71	4.74	23
Poquoson City	78.18	92	89.22	3	-11.04	124
Portsmouth City	74.67	106	73.22	124	1.44	50
Powhatan County	84.36	46	86.28	14	-1.92	83
Prince Edward County	66.15	124	77.22	105	-11.08	125
Prince George County	81.24	78	82.66	64	-1.42	79
Prince William County	83.82	50	82.15	68	1.67	46
Pulaski County	81.34	77	83.51	51	-2.17	86
Radford City	86.21	34	83.27	57	2.94	37
Rappahannock County	79.17	88	88.64	5	-9.47	120
Richmond City	76.74	102	70.86	128	5.87	16

Table E-1 (continued)

School Division	Actual Performance: SOL Pass Rate Results (rank 1 = strongest performance) (rank 132 = weakest performance		Predicted Pass Rate (rank 1 = highest predicted; least challenged) (rank 132 = lowest predicted; most challenged)		Difference in Actual Versus Predicted Pass Rate (rank 1 = strongest performance) (rank 132 = weakest performance)	
	Percent	Rank	Percent	Rank	Difference	Rank
Richmond County	60.00	130	77.04	108	-17.04	130
Roanoke City	71.75	117	76.48	113	-4.73	102
Roanoke County	86.11	36	85.72	22	0.40	62
Rockbridge County	78.82	90	84.47	41	-5.65	108
Rockingham County	83.03	59	84.85	35	-1.81	81
Russell County	82.35	68	83.27	56	-0.92	76
Salem City	83.60	53	83.28	55	0.32	63
Scott County	92.88	2	84.95	31	7.93	9
Shenandoah County	78.03	93	84.79	36	-6.76	110
Smyth County	81.74	75	84.69	39	-2.94	94
Southampton County	68.84	122	79.47	95	-10.64	123
Spotsylvania County	82.01	73	85.04	29	-3.03	95
Stafford County	85.23	40	85.86	19	-0.63	74
Staunton City	81.12	79	81.50	77	-0.38	70
Suffolk City	74.32	109	76.50	112	-2.17	87
Surry County	78.46	91	74.03	121	4.44	28
Sussex County	62.50	127	70.13	131	-7.63	116
Tazewell County	82.74	61	83.95	46	-1.20	77
Virginia Beach City	84.67	43	82.93	62	1.75	45
Warren County	80.98	80	86.23	15	-5.26	105
Washington County	87.93	20	84.72	38	3.21	32
Waynesboro City	82.20	70	80.19	89	2.01	43
West Point	88.33	17	86.32	13	2.02	42
Westmoreland County	72.31	114	77.22	106	-4.91	103
Williamsburg-James City	86.24	32	85.75	20	0.49	60
Winchester City	82.59	64	81.95	72	0.64	58
Wise County	88.87	16	84.34	42	4.53	27
Wythe County	83.14	58	84.79	37	-1.64	80
York County	87.77	21	86.59	9	1.17	52

Source: JLARC staff analysis of the spring 2010 third grade reading SOL pass rates (population = 87,360 third grade students). Predicted scores are based on an average of three predictions stemming from three regression models relating various socio-economic and other factors to the pass rates. The models used had the most predictive power in (1) a student-level analysis, using a student pass-fail dummy variable as the dependent variable, and with the results aggregated to the division level, (2) a school-level analysis, using school average pass rates as the dependent variable, and with the results aggregated to the division-level, and (3) an analysis at the division level, using overall division-wide pass rates as the dependent variable.

Appendix F

Bibliography

Astone, NM and McLanahan, SS. (1991). "Family structure, parental practices, and high school completion." *American Sociological Review, 56.*

Bankston, CL and Caldas, SJ. (1998). "Family structure, schoolmates, and racial inequalities in school achievement." *Journal of Marriage and Family, 60.*

Bean, R. (2011). *Rebuilding the Foundation: Effective Reading Instruction for 21st Century Literacy, Chapter 14.* Solution Tree Press.

Block CC and Parris SR. (2008). *Comprehension Instruction: Research-Based Best Practices.* The Guilford Press.

Bright, E and Hensley, T. (2010). *A Study of The Effectiveness of K-3 Literacy Coaches.* National Reading Technical Assistance Center (NRTAC), RMC Research Corporation.

Cartwright, KB. (2010). *Word Callers: Small-Group and One-to-One Interventions for Children Who "Read" But Don't Comprehend.* Heinemann.

Center on Instruction, Florida State University. (2007). *Teaching All Students to Read in Elementary School: A Guide for Principals.*

Cunningham, AE and Stanovich, KE. (1997). "Early Reading Acquisition and Its Relation to Reading Experience and Ability 10 Years Later." *Developmental Psychology, Vol. 33, No. 6, pp. 934-935, 940.*

Cunningham, PM and Allington, RL. (2011). *Classrooms That Work: They Can All Read and Write.* Pearson Education, Inc.

Duffy, GG. (2009). *Explaining Reading.* The Guilford Press.

Ellery, V. (2009). *Creating Strategic Readers.* International Reading Association.

Francis, DJ, Shaywitz, SE, Stuebing, KK, Shaywitz, BA, and Fletcher, JM. (1996). "Developmental Lag Versus Deficit Models of Reading Disability: A Longitudinal, Individual Growth Curves Analysis." *Journal of Educational Psychology, Vol. 88, No. 1.*

Gambrell, LB, Morrow LM, and Pressley, M. (2007). *Best Practices in Literacy Instruction.* The Guilford Press.

Ginther, DK. (2004). "Family structure and children's educational outcomes: blended families, stylized facts, and descriptive regressions." *Demography, 41.*

Guthrie, JT. (2004). "Teaching for Literacy Engagement." *Journal of Literacy Research, Vol. 36(1).*

Huang FL, Invernizzi MA, and Drake EA. (2011). "The differential effects of preschool: Evidence from Virginia." *Early Childhood Research Quarterly*. Article in press.

Joint Legislative Audit and Review Commission. (2004). *Review of Factors and Practices Associated With School Performance in Virginia.* Commonwealth of Virginia.

Joint Legislative Audit and Review Commission. (2007). *Virginia Preschool Initiative (VPI): Current Implementation and Potential Changes*. Commonwealth of Virginia.

Leibowitz, A. (1977). "Parental inputs and children's achievement." *Journal of Human Resources, 12.*

Lesnick, J., Goerge, R., Smithgall, C., and Gwynne, J. (2010). *Reading on Grade Level in Third Grade: How Is It Related to High School Performance and College Enrollment?* Chapin Hall at the University of Chicago.

McKenna, MC. (2008). *Teaching Reading with an Attitude: What Teachers Can Do to Foster Lifelong Readers*. University of Virginia.

McKenna, MC and Stahl, KAD. (2009). *Assessment for Reading Instruction*. The Guilford Press.

McLanahan, S. (1985). "Family structure and the reproduction of poverty." *American Journal of Sociology, 90.*

Miles, SB and Stipek, D. (2006). Contemporaneous and Longitudinal Associations Between Social Behavior and Literacy Achievement in a Sample of Low-Income Elementary School Children. *Child Development, Vol. 77, No. 1, pp. 103-117.*

Milne, AM, Myers, DE, Rosenthal, AS and Ginsburg, A. (1986). "Single parents, working mothers, and the educational achievement of school children." *Sociology of Education, 59.*

National Center for Education Statistics. (2009). *The Nation's Report Card: Reading 2009*. Institute of Education Sciences (IES), U.S. DOE.

National Institute of Child Health and Human Development. (2000). *Report of the National Reading Panel. Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction.*

National Institute for Literacy. (2001). *Put Reading First: The Research Building Blocks for Teaching Children to Read.*

Organization for Economic Cooperation and Development. (2010). *PISA 2009 Results: Executive Summary*.

Organization for Economic Cooperation and Development. (2010). *PISA 2009 Results: What Students Know and Can Do: Student Performance in Reading, Mathematics and Science, Volume 1.*

Pressley, M. (2006). *Reading Instruction That Works: The Case for Balanced Teaching.* The Guildford Press.

Rand Reading Study Group. (2002). *Reading for Understanding*. Rand Education.

Taylor, BM and Pearson, PD. (2002). *Teaching Reading: Effective Schools, Accomplished Teachers*. Center for the Improvement of Early Reading Achievement (CIERA).

Taylor, BM. (2004). *School Change Classroom Observation Manual*. School Change Framework Project, University of Minnesota.

UNICEF Innocenti Research Centre. (2007). *An Overview of Child Well-Being in Rich Countries*. Report Card 7.

U.S. Department of Education. (2010). *Improving Reading Comprehension in Kindergarten Through 3rd Grade.* What Works Clearinghouse, Institute of Education Sciences (IES) Practice Guide.

U.S. Department of Education. (2010). *Highlights from PISA 2009: Performance of U.S. 15-Year-Old Students in Reading, Mathematics, and Science Literacy in an International Context.* Institute of Education Sciences, National Center for Education Statistics.

Virginia Department of Education. (2008). *Elementary Reading Program Planning and Implementation Tool*. Office of Elementary Instructional Services.

Virginia Department of Education. Virginia Standards of Learning Assessments: Technical Report, 2008-09 Administration Cycle.

Walpole, S. and McKenna, MC. (2007). *Differentiated Reading Instruction: Strategies for the Primary Grades.* The Guildford Press.

Walpole, S., Justice, LM and Invernizzi, MA. (2004). "Closing the Gap Between Research and Practice: Case Study of School-wide Literacy Reform." *Reading and Writing Quarterly(20): 261-283.*

Wepner, SB and Strickland, DS (2008). *The Administration and Supervision of Reading Programs*. Teachers College Press.

Xin, M. and Klinger, DA. (2000). "Hierarchical linear modeling of student and school effects on academic achievement." *Canadian Journal of Education, 25.*

Appendix G

Agency Response

As a part of the extensive validation process, State agencies and other entities involved in a JLARC assessment are given the opportunity to comment on an exposure draft of the report. Appropriate technical corrections resulting from comments provided by these entities have been made in this version of the report. This appendix includes a written response from the Virginia Department of Education.

SEP - 7 2011

COMMONWEALTH of VIRGINIA

Patricia I. Wright, Ed.D.
Superintendent of Public Instruction

DEPARTMENT OF EDUCATION
P.O. BOX 2120
Richmond, Virginia 23218-2120

Office: (804) 225-2023
Fax: (804) 371-2099

September 2, 2011

Mr. Glen S. Tittermary, Director
Joint Legislative Audit and Review Commission
General Assembly Building, Suite 100
Richmond, Virginia 23219

Dear Mr. Tittermary:

Thank you for giving the Virginia Department of Education the opportunity to comment on the exposure draft of the report: *Strategies to Promote Third Grade Reading Performance in Virginia*. JLARC has worked with Virginia teachers, administrators, and Department staff to gather information about third-grade reading performance and to recommend ways to promote and ensure early reading proficiency in the Commonwealth. The recommendations suggest a number of action steps for the Department and the Board of Education, which we will take under consideration.

Thank you for the opportunity to review the exposure draft and submit feedback. I trust this information will be useful to you as you finalize this document.

Sincerely,

Patricia I. Wright

PIW/LMW

JLARC Staff

Lauren W. Axselle
Janice G. Baab
Jamie S. Bitz
Justin C. Brown
Ashley S. Colvin
Andrew B. Dickinson
Martha L. Erwin
Kathryn A. Francis
Harold E. Greer III
Mark R. Gribbin
Anna B. Haley
Nia N. Harrison
Joan M. Irby
Betsy M. Jackson
Paula C. Lambert
Bradley B. Marsh
Joseph M. McMahon
Ellen J. Miller
Nathalie Molliet-Ribet
Gregory J. Rest
David A. Reynolds
Robert B. Rotz
Kimberly A. Sarte
Walter L. Smiley
Tracey R. Smith
Glen S. Tittermary
Massey S. J. Whorley
Christine D. Wolfe

Recent JLARC Reports

401. Placing More Treasury-managed Funds in Virginia Banks
402. Reducing Veteran Homelessness in Virginia
403. Review of State Spending: 2010 Update
404. Interim Report: Fraud and Error in Virginia's Medicaid Program
405. Review of Virginia's Transportation Planning and Programming
406. VRS Biennial Status and Semi-Annual Investment Report No. 35
407. Special Report: State Spending on Standards of Quality (SOQ) Costs, FY 2010
408. Review of Virginia's Corporate Income Tax System
409. Use of Cooperative Procurement by Virginia's School Divisions
410. Virginia Compared to the Other States: 2011 Edition
411. Compliance Review of the VCU Management Agreement
412. Review of the Tobacco Indemnification and Community Revitalization Commission
413. State Contracting and the Federal Immigration Reform and Control Act
414. VRS Semi-Annual Investment Report No. 36
415. Review of Coordination Needs Within Virginia's Education System
416. 2011 Report to the General Assembly

These reports are available on the JLARC website at http://jlarc.virginia.gov

Joint Legislative Audit and Review Commission

Suite 1100 • General Assembly Building • Capitol Square • Richmond, Virginia 23219

804-786-1258 • Fax 804-371-0101 • http://jlarc.virginia.gov