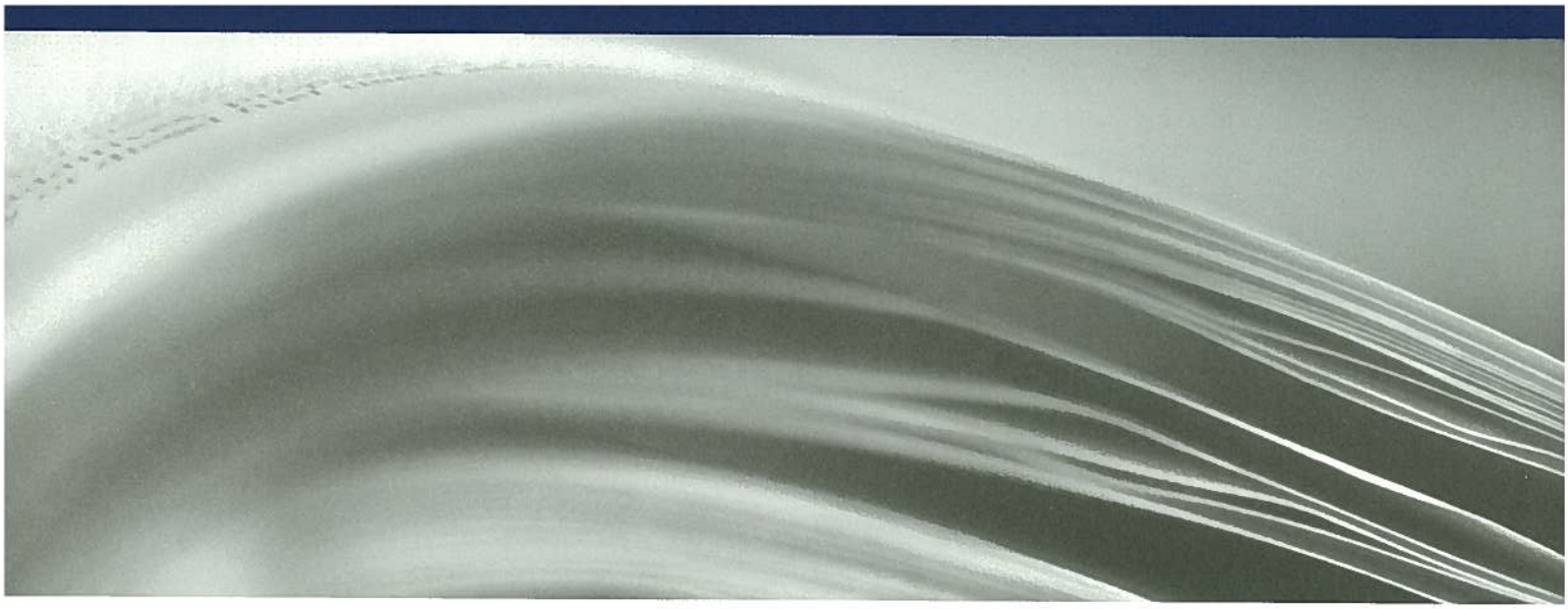

Evaluation of *System 44*

Final Report

Prepared for

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September 2012

RMC RESEARCH

Evaluation of *System 44*

Final Report

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Executive Summary

The purpose of this evaluation of Scholastic's *System 44* conducted by RMC Research was to expand the existing research on students with learning disabilities by conducting a randomized study of struggling readers with approximately half of the sample comprised of students with learning disabilities. Specifically, this evaluation examined the impact of *System 44* on the reading outcomes of struggling readers and on a subsample of students with learning disabilities in Grades 4–8.

Scholastic's *System 44* is a foundational reading program intended for older struggling readers who have not mastered basic phonics and decoding skills. Combining researched-based phonics instruction with adaptive technology, *System 44* is designed to improve students' word reading accuracy, fluency, and comprehension. The *System 44* program delivers research-based instruction through an adaptive computer component; teacher-led small-group instruction; and individual student practice involving high-interest, leveled materials. Thus students who have not responded to classroom reading instruction may benefit from the more intensive and specific decoding instruction provided through *System 44*.

The evaluation of the implementation and impact of *System 44*, which involved 12 elementary schools and 4 middle and K–8 schools in a district in Michigan, sought to answer 7 research questions:

1. What contextual factors are involved in the implementation of *System 44* (i.e., factors that promote or hinder successful implementation of the program)?
2. What do teachers report to be the most valuable features of *System 44*? Does this vary for different subgroups of students?
3. What are the effects of *System 44* on student outcomes? Specifically, how do changes in word-level accuracy, fluency, and reading comprehension achieved by *System 44* students compare to changes achieved by the students in the services-as-usual control group?
4. What are the effects of *System 44* on outcomes of students with learning disabilities? Specifically, how do changes in outcomes achieved by *System 44* students with learning disabilities compare to changes achieved by students with learning disabilities in the services-as-usual control group?
5. How does *System 44* differentially affect other subgroups of students? Specifically, how do changes in word-level accuracy, fluency, and reading comprehension achieved by specific subgroups of *System 44* students (based on gender, ethnicity, economic status, English language proficiency, school level, and initial reading ability), compare to changes achieved by equivalent students who did not use the program?
6. What is the association between *System 44* effects and program implementation—are changes in *System 44* participants' word-level accuracy, fluency, and reading comprehension skills associated with variation in program implementation (including total time on software, total topics mastered, total series completed, time in small groups, resources utilized by students)?
7. Does progress in the *System 44* software vary by students' special education classification and initial reading ability?

The evaluators selected the target sample based on student performance on the fall 2011 Michigan Educational Assessment Program (MEAP) and spring 2011 AIMSweb assessment.

The Scholastic Reading Inventory (SRI) was used to screen students for *System 44* eligibility. The district administered the SRI to all students in the target sample. Those students who scored below 600 Lexiles[1] on the SRI were administered the Scholastic Phonics Inventory (SPI). All students who scored in the Beginning or Developing reader categories on the SPI were randomly assigned (stratified by school and grade level) to either the *System 44* treatment group or the control group. A total of 368 students met the eligibility criteria for *System 44* and were randomly assigned to the treatment group (n = 187) or the control group (n = 181). The groups were equivalent in terms of sex, eligibility for free or reduced-price meals, English proficiency, special education status, ethnicity, and baseline MEAP scores. Of the randomly assigned students, 155 in the treatment group and 162 in the control group received the allocated intervention or control group condition as planned. A total of 195 students (53% of the students who were randomly assigned) had a designated learning disability.

RMC Research hired and trained 4 local testers to individually administer a battery of standardized reading tests to all treatment and control group students. The testers administered the tests in October 2011 to establish baseline scores and again in May 2012 to attain follow-up scores. The tests included the following:

- Test of Silent Reading Efficiency and Comprehension (TOSREC).
- Comprehensive Test of Phonological Processing (CTOPP) Elision subtest.
- Test of Word Reading Efficiency (TOWRE) Sight Word Efficiency subtest.
- Test of Word Reading Efficiency (TOWRE) Phonetic Decoding Efficiency subtest.

Other tests administered to the participating students included the SRI, a test of reading comprehension skills; the SPI, a test of accuracy and fluency in letter recognition, sight word recognition, and non-word decoding; and the English-Language Arts subtest of the MEAP. The evaluation team also collected implementation data through fall and spring teacher surveys; spring teacher and district staff interviews; fall, winter, and spring classroom observations; and a professional development observation.

Program Implementation Findings

The evaluation team assessed the fidelity of *System 44* implementation in 2 ways: classroom observations and teacher self-report in surveys and interviews.

- **Classroom Setup** (accessibility and functioning of computers, headphones, microphones, CD players, and print materials)**:** In fall 2011, 36% of the 20 classrooms observed received the highest rating; this percentage increased to 67% of the classrooms in winter 2012 and 78% in spring 2012.
- **Minutes of Instruction:** Across the 3 observation points, from 72 to 82% of the 20 classrooms provided at least 55 minutes of instruction daily.
- **Inclusion of Program Components:** In most cases, half of the class used the computer software while the other half received small-group instruction or worked independently, and midway through the class period the groups changed places. During teacher-led small-group activities, observers most frequently noted the use of the *System 44* flip chart, the *Decodable Digest,* and *System 44* paperback books*.* While students worked independently, observers most frequently noted the use of *System 44* paperback books, *System 44* audiobooks, and Scholastic Achievement Manager (SAM) worksheets*.* Level of student engagement showed no consistent pattern across the 3 observation periods.
- **Instructional Management and Delivery:** Overall, the observers rated instructional management highest in fall 2011 and rated instructional delivery highest in winter 2012.

[1]For more information about the Lexile Framework for Reading see http://www.lexile.com/

The aspects of instructional management that received the lowest ratings were "differentiate support based on students' needs" and "use flexible groupings for students based on instructional needs." The aspects of instructional delivery that received the lowest ratings were "appear well prepared for the lesson" and "execute the lesson well."

- **Teacher Understanding of *System 44* Program Components**: At the conclusion of the *System 44* training in September 2011 and again in spring 2012, the participating teachers were asked to respond to 10 questions designed to test their understanding of the *System 44* program components. On average, the teachers answered 65% of the items correctly in fall 2011 and 76% of the items correctly in spring 2012. This improvement was statistically significant ($p < .05$).
- **Teacher Ratings of Instructional Practices**: The *System 44* teachers were more likely than the control group teachers to work one-to-one with students; work with small groups of students; group students based on skill levels; group students based on need for additional instruction in specific skills; use reading software, teach specific strategies for decoding unfamiliar words; teach decoding/phonics skills while reading stories; have students practice reading high-frequency words for automaticity; and have students use knowledge of root words, prefixes, and suffixes to decode new words.
- **Whole-Group Instruction:** Most of the 20 teachers (70%) used whole-group instruction every day; the remaining 30% said they did so 2 or 3 times a week.
- **Factors That Facilitated Implementation:** The 18 *System 44* teachers and 2 district staff who were interviewed for the evaluation identified 2 primary factors that facilitated program implementation: professional development and coaching from Scholastic staff and the *System 44* software and printed materials.
- **Factors That Were Barriers to Implementation:** The teachers and district staff identified 3 primary barriers to implementation: problems with technology, problems with student behavior, and the difficulties inherent in learning how to teach a new program.

Student Outcomes

RMC Research used multilevel models to estimate the impact of *System 44* on spring 2012 student outcome scores while controlling for fall 2011 scores, special education status, ethnicity, English language learner status, and school level. The treatment group students performed significantly better than the control group students on 2 of the 4 individual tests: CTOPP Elision and TOWRE Sight Word Efficiency, with effect sizes of .27 and .16, respectively.

Multilevel modeling on SRI and SPI outcomes also showed positive results for the overall sample. The impact was significantly greater for the treatment group students than the control group students on the SRI (effect size = .32). In addition, the treatment group students performed significantly better than the control group students on SPI Nonsense Word Accuracy and SPI Overall Accuracy (effect sizes .32 and .16, respectively). Differences between the 2 groups were not significant for other SPI subtests.

The hierarchical linear models conducted for each of the 4 individual reading test outcomes and the SRI and SPI outcomes consistently revealed main effects for learning disability. Specifically, learning disabled students scored significantly lower than non-learning disabled students on all tests except for the SPI Letter Name Accuracy test. In addition, multilevel modeling revealed significant impacts on the same 2 tests (CTOPP Elision and TOWRE Sight Word Efficiency) that yielded significant impacts in the overall sample; however, the effect sizes for the learning disabled sample were larger than for the overall sample on both tests (.36 and .24 respectively).

Although the effects on learning disabled students were slightly stronger, the impact of *System 44* was statistically equivalent for learning disabled and non-special education students.

RMC Research also examined the moderating effects of demographic characteristics. Ethnicity did not moderate treatment effects—that is, the effects of *System 44* were similar for African American and non-African American students. The results did, however, show that school level moderated the effects of *System 44* on several tests: TOSREC, SRI, SPI Sight Word Accuracy, SPI Decoding Accuracy, and SPI Overall Accuracy. Specifically, student gains on these tests were greater at the middle school level than at the elementary school level.

The results of the implementation analyses showed some variation in implementation across schools. The evaluation team conducted nonexperimental analyses to address the question: To what extent is program implementation associated with treatment impact? The data collected from the teacher surveys and classroom observations were used to develop 4 teacher-level variables: total number of times the teacher used *System 44* materials during small-group instruction, average number of students using *System 44* paperback books or the *Decodable Digest* during independent work time, instructional management, and instructional delivery. However, none of these variables were associated with student outcome measures.

At the point of program exit, *System 44* students should have completed all 160 topics covered in the 25 series that compose the software component of the program. The analysis conducted by the evaluation team revealed that 21 of the 155 *System 44* students (14%) completed all 160 topics (average number of topics completed: 77). On average, students with learning disabilities completed 62 topics compared to non-special education students who completed 95 topics. Further, students who completed fewer than 40 topics spent significantly fewer hours on the software than students who completed between 40 and 100 topics or between 100 and 160 topics.

A student's initial decoding status on the SPI determines the starting series in *System 44* and is an indicator of students' initial reading ability. Seventy-one students were classified as beginning decoders and 82 students were classified as developing decoders at baseline. The analysis of variance (ANOVA) results showed significant differential gains between beginning and developing decoders on the following tests: SPI Sight Word Fluency ($p < .05$), and SPI Overall Fluency ($p < .05$). Specifically, beginning decoders had significantly greater gains on these 2 fluency tests than developing decoders.

In summary, the evaluation of *System 44* revealed significant impacts on several tests for both the overall sample and the learning disabled sample. Additional findings revealed that impacts were stronger on several tests for middle school students than for elementary school students, particularly on SPI Nonsense Word Accuracy, TOSREC, and SRI. Although significant impacts were attained by the end of Year 1, the majority of students in the study did not complete the *System 44* program. Data collected through teacher surveys, classroom visits, and interviews provided information on teachers' implementation of *System 44* in the classroom, and software usage data were used to examine differences in students with varying program exit and topic completion patterns.

Evaluation Goals and Objectives

Effective reading instructional practices for beginning and struggling readers have been the topic of a significant amount of research over the past decade. The authors of a 1998 report published by the National Research Council (Snow, Burns, & Griffin, 1998) concluded that systematic and explicit phonics instruction is an effective means of teaching children to read at the word level. In 2000 the National Reading Panel conducted a meta-analysis of quantitative studies of phonics instruction and determined that systematic phonics instruction helped students learn to read better than all forms of control group instruction (National Institute of Child Health and Human Development, 2000). The panel concluded that systematic and explicit phonics instruction should be incorporated into literacy programs for beginning readers and into programs for preventing and remediating reading difficulties in struggling readers. Vaughn, Wanzek, Woodruff, and Linan-Thompson (2007) suggested that to improve outcomes for students at risk of reading failure, schools need to incorporate best practices in critical areas: effective reading instruction for all students; early identification of students at risk for reading problems; effective interventions for students at risk; and professional development for teachers. Since 2000 numerous instructional programs that incorporate scientific reading research have been developed. In general, the effectiveness of these programs has been difficult to ascertain. Many have not undergone evaluations, and many of the evaluations that have been conducted employed research designs that lacked rigor.

Because students with learning disabilities may be at particular risk of reading failure, the need for rigorous evaluations measuring the effectiveness of reading interventions on students with learning disabilities is even greater. Two recent syntheses of experimental research reported promising results regarding intervention effectiveness. A synthesis of reading comprehension interventions for middle school students with learning disabilities examined studies with treatment and comparison designs: researcher-developed comprehension measures yielded large effect sizes, whereas a few studies that reported standardized measures of reading comprehension indicated medium effect sizes (Solis et al., 2012). Another meta-analysis focused on reading interventions for upper elementary and middle school students with reading disabilities using norm-referenced reading measures. Aggregated across 10 studies conducted between 1994 and 2009, moderate effect sizes were observed for norm-referenced measures of word identification, decoding, and comprehension, and low effect sizes were observed for fluency. Outcomes did not significantly vary based on type of reading instruction or sample characteristics (Flynn, Zheng, & Swanson, 2012).

Two recent studies compared combinations of reading interventions or multiple-component interventions with so-called “ordinary special education” or phonological control programs for students with reading disabilities; in both studies, combination interventions showed significant improvements relative to control programs (Gustafson, Faith, Svensson, Tjus, & Heimann, 2011; Morris et al., 2012). Equivalent gains in the Morris et al. (2012) study were observed for different racial, socio-economic status, and IQ groups. A multiple-baseline design with Grade 2 students targeting word decoding performance demonstrated substantial gains in decoding and reading accuracy, which were maintained during follow-up observations (Cohen & Brady, 2011).

Although recent studies have yielded promising results, the sample sizes in many of the cited studies were small; the average sample size across the 10 studies included in the meta-analysis conducted by Flynn et al. (2012) was 51, and the sample size of the Gustafson et al. (2011) study was 50. In addition, not all research has been uniformly favorable. For example, a randomized experimental design tested the effects of a fluency intervention program on word identification and reading comprehension of middle school students with severe reading delays. Students in the experimental group made more progress on reading fluency than control group

students, yet had no gains in reading comprehension (Spencer & Manis, 2010). The literature on reading interventions for students with reading disabilities suggests that the understanding of intervention effectiveness continues to evolve and indicates a continued need for rigorous large-scale studies of reading interventions on this population of struggling readers.

The purpose of this evaluation of Scholastic's *System 44* conducted by RMC Research was to expand the existing research on students with learning disabilities by conducting a randomized study of struggling readers with approximately half of the sample comprised of students with learning disabilities. Specifically, this evaluation examined the impact of *System 44* on reading outcomes of struggling readers and on a subsample of students with learning disabilities.

Intervention Model

Scholastic's *System 44* is a recently developed foundational reading program intended for older struggling readers who have not mastered basic phonics and decoding skills. Combining research-based phonics instruction with adaptive technology, *System 44* is designed to improve students' word reading accuracy, fluency, and comprehension. The *System 44* program delivers research-based instruction through an adaptive computer component; teacher-led small-group instruction; and individual student practice involving high-interest, leveled materials. Thus students who have not responded to classroom reading instruction may benefit from the more intensive and specific decoding instruction provided through *System 44*.

Students in the *System 44* classroom are expected to receive approximately 20 to 25 minutes of computer-delivered instruction, complete 25 to 30 minutes of small-group and individual work, and receive 5 to 10 minutes of whole-class instruction each day. The program includes 25 series, each of which covers 5 to 8 topics, each of which comprises 4 strands: The Code (decoding instruction), Sight Words (high frequency words), Word Strategies (syllable types and word parts), and Success (reading connected text). Beginning with Series 4, students complete a preliminary Fast Track Assessment to determine whether they have already mastered the skills covered in the series and can skip to the next series. Each software lesson in a series has a set of corresponding practice activities in (a) the *44Book*, (b) the *Decodable Digest,* and (c) the 36-title *System 44* paperback book and audiobook library. Supplementary instructional materials include practice worksheets from the online Scholastic Achievement Manager (SAM), letter tiles, posters, flip chart lessons, and the DVD *Sound and Articulation*. Students track their progress on these materials using the Self-Monitoring Chart. Approximately twice a week the teacher leads a 5- to 10-minute whole-class instructional activity. The teacher can use SAM to generate reports to track individual student progress on each skill and identify students in need of small-group instruction.

Logic Model

Exhibit 1 portrays a logic model that summarizes the *System 44* program inputs, classroom practices, and expected outcomes for participating teachers and students.

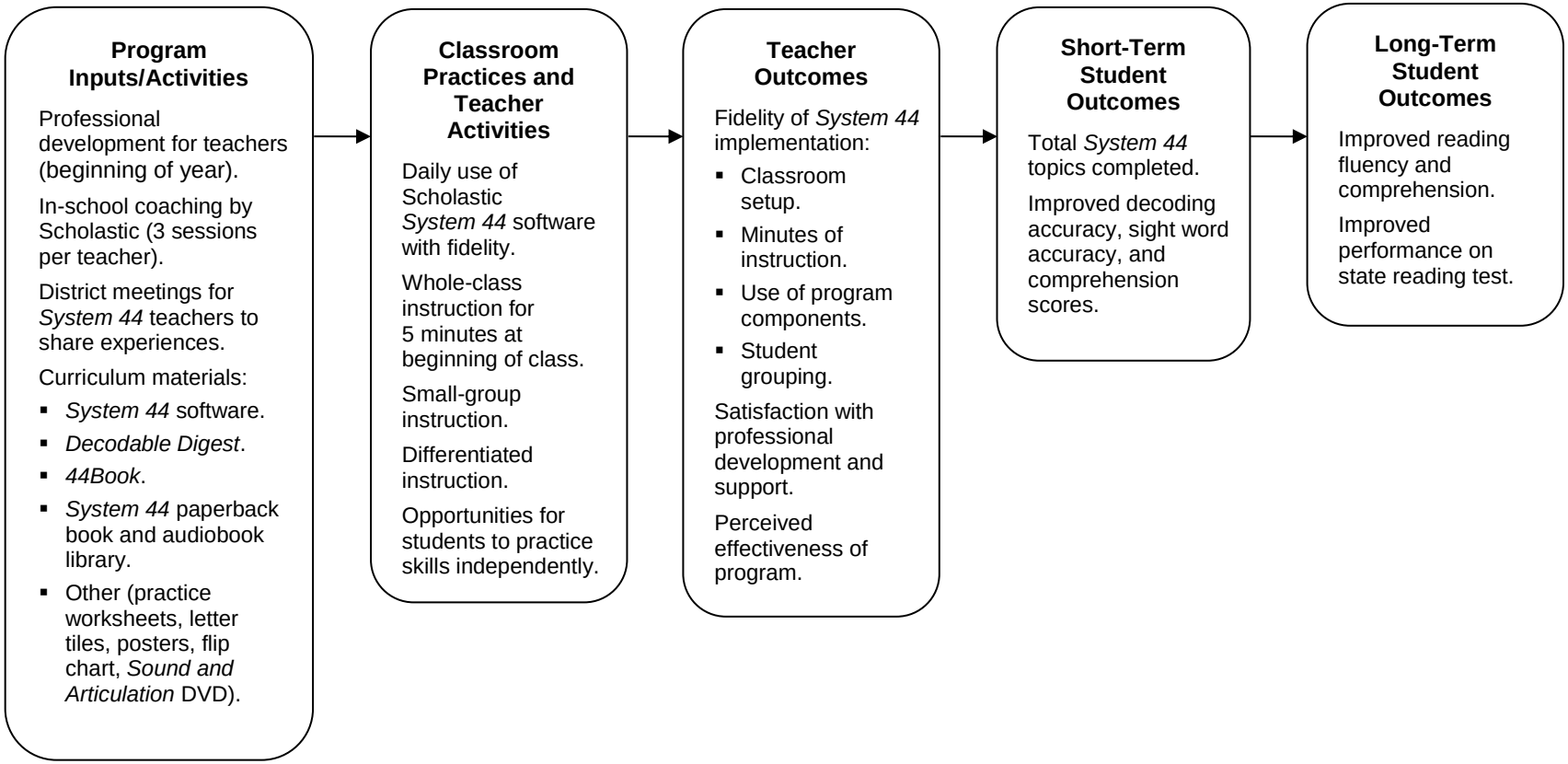
Overview of the Evaluation

Using a randomized design, this evaluation assessed the effectiveness of *System 44* in terms of improving the foundational reading skills of struggling readers in Grades 4–8 in an urban school district in Michigan that served approximately 9,000 students in 21 schools: 15 elementary schools, 2 middle schools, and 2 high schools, and 2 K–8 schools. The evaluation of the implementation and impact of *System 44*, which involved 12 of the elementary schools and all 4 middle and K–8 schools in the district, sought to answer 7 research questions:

1. What contextual factors are involved in the implementation of *System 44* (i.e., factors that promote or hinder successful implementation of the program)?

2. What do teachers report to be the most valuable features of *System 44?* Does this vary for different subgroups of students?
3. What are the effects of *System 44* on student outcomes? Specifically, how do changes in word-level accuracy, fluency, and reading comprehension achieved by *System 44* students compare to changes achieved by the students in the services-as-usual control group?
4. What are the effects of *System 44* on outcomes of students with learning disabilities? Specifically, how do changes in outcomes achieved by *System 44* students with learning disabilities compare to changes achieved by students with learning disabilities in the services-as-usual control group?
5. How does *System 44* differentially affect other subgroups of students? Specifically, how do changes in word-level accuracy, fluency, and reading comprehension achieved by specific subgroups of *System 44* students (based on gender, ethnicity, economic status, English language proficiency, school level, and initial reading ability), compare to changes achieved by equivalent students who did not use the program?
6. What is the association between *System 44* effects and program implementation—are changes in *System 44* participants' word-level accuracy, fluency, and reading comprehension skills associated with variation in program implementation (including total time on software, total topics mastered, total series completed, time in small groups, resources utilized by students)?
7. Does progress in the *System 44* software vary by students' special education classification and initial reading ability?

Exhibit 1
Logic Model for *System 44*



Evaluation Methods

Scholastic implemented *System 44* in 12 elementary, 2 middle, and 2 K–8 schools in an urban district in Michigan during the 2011–2012 school year. The evaluation used a randomized trial design whereby RMC Research randomly assigned eligible students to a treatment (*System 44*) group or a control ("services-as-usual") group.

Sampling Plan

The evaluators selected the target sample based on student performance on the fall 2011 Michigan Educational Assessment Program (MEAP) and spring 2011 AIMSweb assessment. Students who performed below the 50th percentile on the fall 2011 MEAP or below the 25th percentile on the spring 2011 AIMSweb assessment were subsequently tested for *System 44* eligibility. The evaluators purposefully sampled a large proportion of students with learning disabilities. Thus all students in Grades 4–8 in the participating schools with a classified learning disability who met the MEAP or AIMSweb eligibility criteria were tested for *System 44* eligibility. Students with learning disabilities comprised approximately half of the randomized sample. The remainder of the sample was comprised of non-special education students in Grades 4–8. To identify the non-special education sample, non-special education students who met the MEAP or AIMSweb eligibility criteria were stratified into deciles by their MEAP or AIMSweb assessment score. The evaluators randomly selected 20 students from within each decile to test for *System 44* eligibility.

After the target sample was established, a 2-step process was used to establish student eligibility for *System 44*. The Scholastic Reading Inventory (SRI) was used to screen students for *System 44* eligibility. The district administered the SRI to all students in the target sample. Those students who scored below 600 Lexiles[2] on the SRI were administered the Scholastic Phonics Inventory (SPI), a computer-based test used to identify students in need of additional phonics instruction. All students who scored in the Beginning or Developing reader categories on the SPI were randomly assigned (stratified by school and grade level) to either the *System 44* treatment group or the control group.

Participants

A total of 368 students met the eligibility criteria for *System 44* and were randomly assigned to the treatment group (n = 187) or the control group (n = 181). A total of 195 students (53% of the students who were randomly assigned) had a designated learning disability. Exhibit 2 summarizes the characteristics of all treatment and control group students in the randomized sample and those students who were included in the analytic sample. The evaluation team conducted equivalence tests on key factors to determine whether differences between the treatment and control groups existed at baseline. Appendix A provides baseline equivalence test results for the analytic sample. Overall, the treatment and control groups in both the randomized and analytic samples were equivalent in terms of sex, eligibility for free or reduced-price meals, English language proficiency, special education status, ethnicity, and baseline MEAP scores.

[2]For more information about the Lexile Framework for Reading see http://www.lexile.com/

Exhibit 2
Student Characteristics

Characteristic	Randomized Sample		Analytic Sample	
	Treatment (*n* = 187)	Control (*n* = 181)	Treatment (*n* = 155)	Control (*n* = 162)
Grade Level				
4	37 (20%)	30 (17%)	31 (20%)	28 (17%)
5	58 (31%)	65 (36%)	54 (35%)	59 (36%)
6	45 (24%)	40 (22%)	33 (31%)	35 (22%)
7	23 (12%)	19 (10%)	19 (12%)	17 (10%)
8	24 (13%)	27 (15%)	18 (12%)	23 (14%)
Sex				
Male	114 (61%)	108 (60%)	94 (61%)	97 (60%)
Female	73 (39%)	73 (40%)	61 (39%)	65 (40%)
Free or Reduced-Price Meals				
None	9 (5%)	9 (5%)	7 (4%)	6 (4%)
Free or reduced price	178 (95%)	172 (95%)	148 (96%)	156 (96%)
English Learner Status				
Non English learner	180 (96%)	172 (95%)	149 (96%)	153 (94%)
English learner	7 (4%)	9 (5%)	6 (4%)	9 (6%)
Special Education Status				
None	86 (46%)	92 (51%)	71 (46%)	81 (50%)
Specific learning disability	97 (52%)	88 (49%)	84 (54%)	81 (50%)
Other	4 (2%)	1 (1%)	0 (0%)	0 (0%)
Primary Ethnicity				
Caucasian	24 (13%)	19 (10%)	16 (10%)	17 (10%)
African American	146 (78%)	141 (78%)	124 (80%)	124 (77%)
Hispanic	17 (9%)	21 (12%)	15 (10%)	21 (13%)

Note. Randomized sample *n* = 368; Analytic sample *n* = 317.

Of the 368 randomly assigned students, 317 (155 treatment, 162 control) received the allocated intervention or control group condition as planned. Of the 32 treatment group students and 19 control group students who did not receive the allocated intervention or control group conditions as planned, 8 treatment and 1 control group student were misclassified as eligible for the intervention and study at the time of random assignment and should be excluded from attrition analyses. Reasons for exclusion include: skills deemed too high for the intervention after random assignment occurred (3 treatment), inappropriate assignment of a special education designation other than learning disability (4 treatment, 1 control), and non-advancement to Grade 4 (1 treatment). A total of 34 students (18 treatment, 16 control) were eligible for the intervention and study but did not receive the allocated intervention or control group condition for the following reasons: 22 (11 treatment, 11 control) transferred to a non-*System 44* school, 9 were withdrawn by their parents (6 treatment, 3 control), 2 encountered irreconcilable

scheduling issues (1 treatment, 1 control), and 1 was homebound for medical reasons (1 control). Additionally, 8 students who received the allocated treatment or control condition were excluded from the analytic sample: 1 treatment group student was not administered pretests because the test administrator was unable to locate the student, and 7 students (5 treatment, 2 control) were not administered posttests because they were on long-term suspension through the spring 2011 testing period. A total of 317 of the 368 randomly assigned students (86%) were retained in the final analytic sample for all individual test outcomes. The final SRI analytic sample was 287 and the final SPI analytic sample was 279.[3]

To assess whether selective study attrition occurred in the analytic sample, the evaluation team conducted equivalence tests on baseline demographic characteristics and MEAP reading scores. No differences were evident at baseline in terms of sex, eligibility for free or reduced-price meals, special education classification, and English language learner classification between students who were retained in the analytic sample and students who were not. However, students retained in the final analytic sample were more likely than students who were not retained to be Hispanic.

Data Collection

Data collection activities for the *System 44* evaluation included student reading tests, teacher surveys, *System 44* classroom observations, a professional development observation, and staff interviews. Survey, observation, and interview materials are included in Appendix B.

Student Reading Tests

RMC Research hired and trained 4 local testers to administer a battery of standardized reading tests to all treatment and control group students. The testers administered the tests to each student separately over a 3-week period in October 2011 to establish baseline scores and again in May 2012 to attain follow-up scores. The tests included the following:

- **Test of Silent Reading Efficiency and Comprehension (TOSREC)**—A 60-item comprehension test that assesses a student's ability to silently read a sentence and identify whether the sentence is true or false. The test is grade level specific. Form A was administered in fall 2011, and Form C was administered in spring 2011.
- **Comprehensive Test of Phonological Processing (CTOPP) Elision subtest**—A 34-item test that assesses the extent to which a student can say a word and then say what is left of the word after being instructed to drop out designated sounds.
- **Test of Word Reading Efficiency (TOWRE) Sight Word Efficiency subtest**—A 108-item test that measures the number of printed words that a student can accurately read aloud in 45 seconds. Form A and Form B were administered back-to-back in fall 2011 and spring 2011.
- **Test of Word Reading Efficiency (TOWRE) Phonetic Decoding Efficiency subtest**—A 66-item test that assesses a student's ability to apply grapho-phonemic knowledge by reading pronounceable non-words. The test measures the number of non-words that a student can accurately read aloud in 45 seconds. Form A and Form B were administered back-to-back in fall 2011 and spring 2011.

The battery of standardized reading tests required approximately 20 to 25 minutes to administer to each student, which included time to build rapport. The test administrators reported that the testing went smoothly overall. Other tests administered to the participating students included the

[3] A total of 30 students were excluded from the SRI analytic sample due to either a baseline test date that occurred mid-year or a follow-up test that occurred mid-year. A total of 26 students were excluded from the SPI analytic sample due to a follow-up test that occurred mid-year.

SRI, a test of reading comprehension skills; the SPI, a test of accuracy and fluency in letter recognition, sight word recognition, and non-word decoding; and the English-Language Arts subtest of the MEAP.[4]

Teacher Survey

A survey administered to *System 44* teachers in fall 2011 and spring 2012 gathered information about the teachers' background, the types of instructional strategies and activities they employed to teach foundational reading skills, their opinions about the effectiveness of *System 44*, their opinions about *System 44* professional development, and their knowledge of the *System 44* program. For comparative purposes, a sample of control group teachers completed a modified version of the survey in spring 2012. Teachers who taught both *System 44* and control group students answered additional questions about instructional materials and types of assistance available to control group students.

Classroom Observations

RMC Research staff observed every *System 44* classroom 3 times during the 2011–2012 school year (November, February, and May) to gather data on *System 44* implementation. The classroom visit protocol captured the essential features of *System 44* and other features of effective instruction such as maintaining a positive learning environment, monitoring students, and providing differentiated support based on student needs.

Professional Development Observations

RMC Research staff also observed the professional development provided to *System 44* teachers at the beginning of the school year to better understand the expected implementation of the program and any training issues that might have interfered with the fidelity of program implementation.

Staff Interviews

The end-of-year interviews with teachers, principals, and district staff assessed the contextual environment in which *System 44* was implemented, the factors that facilitated or hindered implementation, the fidelity of *System 44* implementation, and staff perceptions of *System 44* materials and instructional activities.

Analysis Plan

RMC Research utilized a mixed-method approach to evaluate the impact of *System 44*. Program implementation was evaluated through quantitative analyses of classroom observations and teacher surveys; these analyses were supported by qualitative information gathered through interviews with district staff, school principals, and *System 44* teachers. To measure the impact of *System 44* on student test scores, RMC Research used a series of quantitative analyses.

Implementation Analysis

Classroom implementation fidelity was defined as the average of the fidelity ratings that were part of the classroom observations conducted by the evaluation team in fall 2011, winter 2011, and spring 2012.

[4]Follow-up MEAP scores, which will be administered in fall 2012, were not available at the time of this report. Thus MEAP outcomes are not presented in this report.

Implementation fidelity included the following components:

- Classroom setup.
- Minutes of instruction on software and in small groups.
- Inclusion of all program components.
- Instructional management and delivery.

Teacher survey data were used to examine teachers':

- Background characteristics.
- Perceptions of *System 44* professional development.
- Reading instructional practices prior to *System 44* compared to reading instructional practices using *System 44*.
- Reading instructional practices of *System 44* teachers compared to reading instructional practices of control group teachers.
- Perceptions of the effectiveness of reading instructional practices prior to and using *System 44.*
- Frequency of use of *System 44* components.
- Understanding of *System 44* program concepts and components.

Teacher interview data from spring 2012 provided detailed information concerning the teachers' perceptions of the strengths and challenges of using *System 44,* how they made decisions concerning student grouping, and how they used various SAM reports. Principal interview data from spring 2012 provided information about the strengths and challenges of implementing *System 44* and other contextual issues. District staff interview data from spring 2012 provided additional information about the professional development, the factors that facilitated and hindered implementation of *System 44*, perceptions of program effectiveness, and recommendations for future implementation.

Impact Analysis

This evaluation used an intent-to-treat statistical model—that is, a framework in which participants are analyzed within their initial random assignment group regardless of whether they actually received treatment. Because students were clustered within schools, a multilevel model was used to estimate the impact of the intervention on spring 2012 outcome scores while controlling for baseline score, ethnicity, special education status, English language proficiency, and school level. The model was run separately for each outcome measure. The district provided individual student demographic data for grade level, sex, free or reduced-price meal eligibility, ethnicity, special education status, and English language proficiency. The following demographic covariates were included in the model: ethnicity (Caucasian), special education status, and sex. In addition, school level was added as a covariate. No data were missing for any of the demographic covariates. To assess the impact of *System 44* on student outcomes, the evaluation team used hierarchical linear modeling, controlling for baseline scores and student demographic characteristics at Level 1 and school at Level 2. The 2-level model for estimating the impact of *System 44* on change in outcomes follows:

Level 1 Model:

$$Y_{ij} = \beta_{0j} + \beta_{1j}(Trt_{ij}) + \beta_{2j}(Pretest_{ij}) + \beta_{3j}(LD_{ij}) + \beta_{4j}(Ethnicity_{ij}) + \beta_{5j}(ELL_{ij}) + \beta_{6j}(Level_{ij}) + \varepsilon_{ij}$$

Level 2 Model:

$$\beta_{0j} = \gamma_{00} + \mu_{0j}$$
$$\beta_{1j} = \gamma_{10}$$
$$\beta_{2j} = \gamma_{20}$$
$$\beta_{3j} = \gamma_{30}$$
$$\beta_{4j} = \gamma_{40}$$
$$\beta_{5j} = \gamma_{50}$$
$$\beta_{6j} = \gamma_{60}$$

where:

ε_{ij} = the random error term for student *i* in school *j*
μ_{0j} = the random intercept term for school *j*

and:

Y_{ij} = the posttest score for student *i* in school *j*
Trt_{ij} = the treatment indicator for student *i* in school *j* (0 = control, 1 = treatment)
$Pretest_{ij}$ = the posttest score for student *i* in school *j*
LD_{ij} = the special education indicator for student *i* in school *j* (0 = no special education classification, 1 = learning disabled classification)
$Ethnicity_{ij}$ = the ethnicity indicator for student *i* in school *j* (0 = non-African American, 1 = African American)
ELL_{ij} = the English language learner indicator for student *i* in school *j* (0 = non-English language learner, 1 = English language learner)
$Level_{ij}$ = the school level indicator for student *i* in school *j* (0 = middle, 1 = elementary)

A similar 2-level model was used to assess the impact of *System 44* on change in outcomes in the learning disabled sample; the model was the same as that specified above except for the removal of the special education indicator.

Program Implementation Findings

To provide context for interpreting the impact of the *System 44* intervention, the evaluation team assessed its implementation from several perspectives. Scholastic staff expected implementation to improve as teachers gained experience using *System 44*. Although many factors contributed to the fidelity of implementation, barriers to implementation also emerged. This section summarizes the findings pertaining to program implementation.

Contextual Factors in *System 44* Implementation

Data regarding contextual factors involved in the implementation of *System 44* were obtained from the teacher surveys; the interviews of teachers and district staff; and the observations of *System 44* classrooms. These data include descriptions of the *System 44* classrooms and the counterfactual, teacher background characteristics, professional development activities, and the observed fidelity of *System 44* implementation.

System 44 Classrooms

Scholastic staff expected teachers using the *System 44* model in a 60-minute class period to allocate their time such that students spent approximately 20 minutes on the *System 44* software; approximately 20 minutes reading *System 44* library books, completing book logs, and taking Scholastic Reading Counts quizzes; and approximately 20 minutes in whole-class or small-group instruction involving SMART lessons, the *44Book*, or the *Decodable Digest* or conferencing individually with the teacher.

The Counterfactual

The counterfactual varied across schools because students in the control group did not receive a uniform alternative to the *System 44* intervention. Most of the elementary schools used a pull-out model, but students were pulled out of a variety of classroom activities including language arts, physical education, art, and resource room time (for some special education students). One middle school used *System 44* as a replacement reading class and the other middle school pulled students out of a study skills class. The control group students who remained in the regular classroom engaged in a variety of activities across content areas. Some control group students who were designated as special education spent time in the resource room of another teacher or in the resource room of the *System 44* teacher but at a different time than the *System 44* time block. Although some *System 44* teachers also taught control group students, they did not use *System 44* materials with them. Control group students received pull-out supplemental instruction from resource room (special education) or Title I teachers, in-class assistance from instructional aides, and after-school tutoring. The most common reading interventions included Houghton-Mifflin, Read Naturally, ReadAbout, SRA Decoding, Fast ForWord, SuccessMaker, and Reading A–Z. Control group students who participated in Resource Room instruction were exposed to a wide variety of instructional materials.

Teacher Background Characteristics

The teacher survey administered to both the treatment group and the control group solicited information about the respondents' teaching experience, education, certifications, and prior experience with Scholastic's *System 44* and *Read 180* programs. Most of the *System 44* teachers (96%) were female, and 89% of the control group teachers were female. Exhibit 3 shows that the *System 44* teachers had more teaching experience than the control group

teachers and were more likely to have a degree beyond a Bachelor's degree. The *System 44* teachers were also more likely to have full teacher certification (Professional Education Certificate). Both groups had a few teachers with experience teaching *Read 180,* and 1 control group teacher had previous experience teaching *System 44.*

Exhibit 3
Teacher Education and Experience

	Treatment			Control		
Characteristic	***M***	***SD***	**Percent**	***M***	***SD***	**Percent**
Teaching Experience						
Total years of teaching experience	13.7	8.3		11.3	6.8	
Years teaching in this district	11.7	7.4		8.4	6.5	
Years teaching at current school	5.2	5.8		6.2	5.7	
Education (Highest Degree)						
Bachelor's degree			28%			38%
Master's degree			73%			59%
Specialist or doctorate			0%			3%
Certifications						
Interim Teaching Certificate			0%			3%
Provisional Certificate			17%			34%
Professional Education Certificate			83%			62%
Prior Scholastic Experience						
System 44			0%			4%
Read 180			11%			11%

Note. n = 20 *System 44* teachers; n = 29 control group teachers.

Professional Development

Professional development for the *System 44* teachers included a 1-day training in September 2011, follow-up training in November 2011, and monthly coaching visits from Scholastic staff from December 2011 through May 2012. Analyses of the professional development are based on the training observation results, information obtained from the Scholastic trainer at the conclusion of the training, and the teacher survey results.

In September 2011 Scholastic staff provided a 1-day training for teachers who were likely to use the *System 44* program. The training started with some confusion: more teachers than expected came to the training, and the teachers were prepared for the training to start earlier than the time the district had relayed to the Scholastic trainer and the evaluator. District staff arrived after the training began, clarified which teachers needed to participate, and released 6 teachers from the training. The district staff did not remain at the training. Among the 26 teachers left in attendance, most indicated that they were not familiar with *System 44* prior to the training.

The trainer provided a thorough overview of *System 44* that sufficiently addressed the intervention components and the student learning goals and objectives and lightly covered the theoretical and empirical support for the intervention content. The trainer introduced the teachers to the breadth of the instructional materials, dividing them into 3 small groups that

rotated among stations, but did not have sufficient time to cover the materials in depth. The trainer addressed questions about specific implementation requirements for the evaluation (e.g., the *System 44* class period needed to be 60 minutes long and students needed at least 20 minutes on the computer daily) and took note of questions and concerns for the district to address with the teachers, such as how the teachers would gain access to computers for the program and the services that high-needs students selected for the control group would receive.

The trainer addressed strategies for integrating the intervention into the classroom, utilizing the embedded tests and highlighting key instructional skills, but the teachers spent little time practicing the skills. Overall, the trainer provided a quality, interactive training that was tailored to the teachers' needs, covered the breadth of the program materials, and addressed the teachers' questions and concerns. A longer initial training would have allowed the trainer to cover the materials in greater depth and offer more time for teachers to practice key instructional strategies.

At the conclusion of the training in September 2011 the teachers responded to several survey questions. *System 44* teachers responded to survey questions about the professional development activities again in spring 2012. Exhibit 4 summarizes the *System 44* teachers' responses at both time points. Overall, the teachers gave the professional development above average ratings, with mean ratings somewhat higher in spring 2012 than in fall 2011.

Exhibit 4
Ratings of *System 44* Professional Development

	Fall 2011		Spring 2012	
Professional Development Characteristic	***M***	***SD***	***M***	***SD***
The teacher training prepared me to use the program in my classroom.	3.56	0.78	3.80	1.20
The individual support from Scholastic during the year enhanced my skills in using *System 44* in my classroom.	3.11	0.90	4.50	0.51
The individual support from district staff during the year enhanced my skills in using *System 44* in my classroom.	—	—	3.25	1.41
I am pleased with the *amount* of *System 44* professional develop I received.	—	—	3.55	1.10
I am pleased with *quality* of *System 44* professional development I received.	3.72	1.02	3.95	1.05

Note. A dash indicates that the question was not asked at that time point. Ratings based on a 5-point scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Number of respondents = 18.

Fidelity of Implementation: Classroom Observations

The evaluation team assessed the fidelity of *System 44* implementation in 2 ways: classroom observations and teacher self-report on surveys and in interviews. This section summarizes the fall 2011, winter 2012, and spring 2012 classroom observations in terms of classroom setup, minutes of instruction, inclusion of program components, instructional management, and instructional delivery.

Classroom Setup. Classroom setup was rated on 3 criteria: computers for at least one third of the class are accessible and functioning, auxiliary equipment (headsets, microphones, CD players) are accessible and functioning, and *System 44* materials are easily accessible to

students and teachers. The mean rating across these items was converted to a 4-point scale. In fall 2011, 36% of the 20 classrooms observed received the highest rating; this percentage increased to 67% of the classrooms in winter 2012 and 78% in spring 2012.

Minutes of Instruction. Average minutes of *System 44* instruction were calculated for the fall 2011, winter 2012, and spring 2012 observations and ranged from 56 to 58 minutes. From 72% to 82% of the 20 classrooms provided at least 55 minutes of instruction daily.

Inclusion of Program Components. During small-group instruction and individual work time students were expected to use 3 primary program components on most days: the *44Book,* the *Decodable Digest,* and the *System 44* paperback book and audiobook library. In addition, on some days students used letter tiles and SAM practice worksheets or teachers used the *System 44* flip chart to instruct small groups. Exhibit 5 summarizes the materials used during the observed teacher-led small-group instruction, and Exhibit 6 summarizes the materials used during the observed independent work time. In most cases half of the class used the computer software while the other half received small-group instruction or worked independently, and midway through the class period the groups changed places.

During teacher-led small-group activities, observers most frequently noted the use of the *System 44* flip chart, the *Decodable Digest,* and *System 44* paperback books*.* While students worked independently, observers most frequently noted the use of *System 44* paperback books, *System 44* audiobooks, and SAM worksheets*.* The mean number of students using each type of material declined over time for *System 44* audiobooks and SAM worksheets but remained about the same for *System 44* paperback books. Level of student engagement showed no consistent pattern across the 3 observation periods.

Exhibit 5
Use of Instructional Materials During Teacher-Led Small-Group Activities

	Total Number of Times Observed			Mean Level of Use		
Instructional Item	**Fall**	**Winter**	**Spring**	**Fall**	**Winter**	**Spring**
Decodable Digest	4	1	6	1.5	2.0	1.5
44Book	4	1	2	1.8	1.0	2.0
Teaching resources for *System 44* library	1	2	0	2.0	1.0	—
Letter tiles	2	2	2	2.0	2.0	1.0
System 44 flip chart	5	8	15	2.0	1.5	1.5
Sound and Articulation DVD	0	0	0	—	—	—
SAM resources/worksheets	5	1	1	1.8	2.0	2.0
System 44 library books	4	2	3	1.8	2.0	2.0
SAM reports	0	1	1	—	2.0	2.0

Note. Classrooms observed: 20. Total number of times observed is out of 25 rotations in fall, 29 in winter, and 45 in spring. Rating scale for level of use: 0 = *none*; 1 = *partially;* 2 = *fully*. Dashes indicate that the item was not observed.

Exhibit 6
Use of Instructional Materials in Independent Work

	Total Number of Times Observed			Mean Number of Students Using			Mean Level of Student Engagement		
Type of Material	**F**	**W**	**S**	**F**	**W**	**S**	**F**	**W**	**S**
System 44 paperback books	8	6	14	4.5	4.3	4.3	3.5	2.4	3.3
System 44 audiobooks	6	8	7	5.0	3.2	3.0	3.3	3.1	3.3
44Book	2	2	5	2.5	3.0	2.4	4.0	3.0	2.8
Decodable Digest	1	1	5	4.0	1.0	3.4	2.0	4.0	2.7
SAM resources/ worksheets	2	6	2	5.0	4.0	3.0	2.5	2.2	3.0

Note. Classrooms observed: 20. Total number of times observed is out of 25 rotations in fall, 29 in winter, and 45 in spring. F = fall, W = winter, S = spring. Rating scale for level of student engagement: 0 = *Not at all engaged/none engaged*; 1 = *partially engaged/some engaged*; 2 = *fully engaged/all engaged*.

Instructional Management and Delivery. Each *System 44* class observed was rated on 6 aspects of instructional management pertaining to the teacher's ability to maintain a positive learning environment, monitor students, keep students on task, provide smooth transitions between rotations, use flexible student groups, and differentiate support based on student needs. Each class was also rated on 5 aspects of instructional delivery: pacing, appropriateness of the delivery for the student skill level, teacher preparation, active engagement of the students, and overall lesson execution. Exhibit 7 summarizes the mean ratings for instructional management and delivery across the 3 observation time points. Overall, the observers rated instructional management highest in fall 2011 and rated instructional delivery highest in winter 2012.

Exhibit 7 also provides mean ratings of the 11 items that compose the 2 scales. The aspects of instructional delivery that received the lowest ratings were "appear well prepared for the lesson" and "execute the lesson well." The aspects of instructional management that received the lowest ratings were "differentiate support based on students' needs" and "use flexible groupings for students based on instructional needs." The ratings on these instructional management aspects were lowest in fall 2011; ratings on instructional delivery were lowest in spring 2012.

Exhibit 7
Ratings of Instructional Management and Delivery

	Fall		Winter		Spring	
Scale	***M***	***SD***	***M***	***SD***	***M***	***SD***
Instructional Management	3.1	0.99	2.8	1.03	2.8	1.25
Instructional Delivery	3.0	1.20	3.4	1.07	2.7	1.10
Instructional Management						
Maintain positive learning environment	2.3	0.82	2.6	0.52	2.5	1.71
Monitor students	2.4	0.83	2.6	0.70	2.6	1.06
Keep students on task	2.7	0.62	2.6	0.70	2.3	0.84
Ensure smooth transitions between rotations	2.2	1.07	2.2	0.79	2.3	0.77
Use flexible groups for students based on instructional needs	2.0	1.12	1.4	1.42	1.4	0.70
Differentiate support based on students' needs	1.6	1.16	1.3	1.34	1.7	0.96
Instructional Delivery						
Maintain an appropriate pace	2.4	0.77	2.6	0.52	2.1	0.78
Deliver lessons appropriate for skill levels of students	2.3	0.65	2.5	0.71	2.0	0.71
Appear well prepared for lesson	2.4	1.01	2.5	0.53	1.8	1.13
Actively tries to engage students	2.4	0.77	2.6	0.70	2.4	0.70
Executed the lesson well	2.2	1.03	2.3	0.82	1.8	0.90

Note. Rating scale: 0 = *not at all*; 1 = *to a small extent*; 2 = *to a moderate extent*; 3 = *definitely.* Number of classroom observations = 20.

Fidelity of Implementation: Teacher Self-Report

The spring 2012 teacher survey respondents reported that students used the *System 44* software from 15 to 45 minutes daily (average across classrooms: 21.8 minutes). The number of computers available in each classroom ranged from 1 to 12 (average 5.4). Exhibit 8 shows the reported frequency of use for a range of *System 44* components. The *System 44* flip chart, *44Book,* and *Decodable Digest* were used most frequently.

At the conclusion of the *System 44* training in September 2011 and again in spring 2012 the participating teachers were asked to respond to 10 questions designed to test their understanding of the *System 44* program components. On average, the teachers answered 65% of the items correctly in fall 2011 and 76% of the items correctly in spring 2012. This improvement was statistically significant ($p < .05$).

Exhibit 8
Reported Use of *System 44* Components

System 44 Component	Mean Frequency Rating	*SD*
Whole-class instruction in *System 44*	4.70	0.47
Teaching Guide (bound copy)	4.60	0.60
44Book or *Decodable Digest*	4.20	0.83
SAM reports	3.55	0.83
Small-group instruction: SMART lessons	4.00	0.86
Individual student support (outside of small group)	4.10	0.72
SAM worksheets	3.21	1.27
SAM book expert (to identify appropriate books)	2.11	1.20
Flip chart	4.37	0.68
Letter tiles	2.32	1.16
System 44 audiobooks	3.65	1.39
Reading Counts quizzes	3.26	1.19
Sound and Articulation DVD	1.85	0.75
Conference guides (for *System 44* library books)	2.40	1.19
Scholastic Red routines	2.95	1.19
Materials not part of *System 44*	1.55	0.94

Note. Frequency ratings 1 = *rarely or never*; 3 = *once a week*; 5 = *every day.* Number of respondents = 20.

The teachers also rated their understanding of 5 key *System 44* program components in the fall and spring (see Exhibit 9). Overall, the teachers reported a greater understanding of how to implement the program in spring 2012 than they had in fall 2011, but the differences were statistically significant only for the item "I understand when to use the *Decodable Digest,* the *44Book,* and *System 44* library books for student practice." In addition, the teachers' responses to the questions about understanding of key program components varied more in the spring than in the fall.

Instructional Grouping. Interviews with *System 44* teachers conducted in spring 2012 indicated that 77% used the SAM Differentiated Instruction Report to group students for small-group instruction. However, because some class sizes were very small a few teachers had students use the computer software as a group and then receive individual instruction from the teacher or work independently. One teacher reported grouping students based on who worked well together, and another teacher reported keeping students who were on medication together.

Exhibit 9
Understanding of Key *System 44* Program Components

	Fall		Spring	
Item	***M***	***SD***	***M***	***SD***
I understand . . .				
How the *System 44* software works to individualize instruction and practice for students.	3.39	0.92	3.89	1.37
What to do during small-group instruction.	3.78	0.88	4.11	1.28
How to use SAM to group students for small-group instruction.	3.67	0.97	4.06	1.26
When to use the *Decodable Digest*, the *44Book*, and *System 44* library books for student practice.	3.28*	0.96	4.06*	1.21
How to monitor student progress in *System 44*.	3.78	0.81	4.06	1.26

Note. Rating scale: 1 = *strongly disagree*; 5 = *strongly agree*. Number of respondents = 18.
*$p < .05$.

Whole-Group Instruction. The teachers varied widely in terms of how frequently they instructed students as a whole group. Most of the 20 teachers (70%) used whole-group instruction every day; the remaining 30% said they did so 2 or 3 times a week.

SAM Reports. In spring 2012 the teacher interviewees were shown 6 SAM reports and asked to indicate how often they used each report. About two-thirds of the teachers used the Differentiated Instruction Report to identify topics for small-group instruction, and 61% used the Software Performance Report, the Reading Progress Report, and the Response to Intervention Reports ranging from weekly to every 2 weeks. Least frequently used were the Student Mastery Report and the Parent Report. Several teachers commented that these reports duplicated information that could be found on other reports.

Teacher Perceptions of the *System 44* Program

The fall 2011 the teacher survey asked respondents to rate the effectiveness of the reading intervention they had used the previous year (2009–2010) and their expectations regarding the effectiveness of *System 44*. The spring 2012 survey asked respondents to rate their perceptions of the effectiveness of *System 44*. Exhibit 10 provides the mean ratings for the 3 time points. Overall, teachers expected *System 44* to be more effective than their prior year's program in 5 basic reading skill areas, and most of these expectations were borne out by their ratings of *System 44* in spring 2012. The exception was comprehension—a skill area in which the teachers expected *System 44* to be more effective than their previous program but on which they rated *System 44* lower than their previous reading program at the end of the school year. The differences between the perceived effectiveness of the prior program and the *System 44* program with respect to teaching phonemic awareness and phonics were statistically significant.

Exhibit 10
Perceived Effectiveness of Reading Instruction

	Perceived Effectiveness of Prior Program (2010–2011)		Expected Effectiveness of *System 44* (Fall 2011)		Perceived Effectiveness of *System 44* (Spring 2012)	
Reading Skill Area	***M***	***SD***	***M***	***SD***	***M***	***SD***
Phonemic awareness	2.88**	1.11	4.00	1.41	4.06**	1.51
Phonics	2.88*	1.27	4.06	1.39	4.11*	1.53
Fluency	3.18	0.95	4.00	1.37	3.44	1.42
Vocabulary	3.59	0.80	4.17	1.15	3.61	1.38
Comprehension	3.71	0.85	4.17	1.15	3.39	1.38

Note. Rating scale from 1 (lowest) to 5 (highest). Number of respondents = 18.
*$p < .05$, **$p < .01$.

The teachers also responded to questions regarding the reading instructional practices they used with struggling readers both prior to and with *System 44*. The teachers indicated whether each practice listed was central to their reading instruction, a small part of their reading instruction, or not part of their reading instruction. The control group teachers responded to the same questions regarding the 2011–2012 school year. Exhibit 11 lists the practices for which the percentage of teachers reporting that the practice was central to their instruction changed by at least 25%. Appendix C presents the results for all of the reading instructional practices.

Of the 17 instructional practices whose importance changed at least 25%, 8 reflected change in the *System 44* teachers' instruction between 2010–2011 and 2011–2012 and 13 reflected differences between the *System 44* teachers and the control group teachers in 2011–2012. The *System 44* teachers were more likely than the control group teachers to work one-to-one with students, work with small groups of students, group students based on skill levels, group students based on need for additional instruction in specific skills, use reading software, teach specific strategies for decoding unfamiliar words, teach decoding/phonics skills while reading stories, have students practice reading high frequency words for automaticity, and have students use knowledge of root words, prefixes, and suffixes to decode new words. The *System 44* teachers were less likely than the control group teachers to develop reading skills using science and social studies texts, use teacher-made materials, use diagnostic tests to identify students who need reading intervention services, or have students answer questions in writing after reading stories. Compared to 2010–2011, in 2011–2012 the *System 44* teachers were more likely to provide time for students to practice skills on their own, teach whole-class reading lessons, use reading software, teach specific strategies for decoding unfamiliar words, and have students use knowledge of root words, prefixes, and suffixes to decode new words.

Exhibit 11
Practices Reported as Central to Reading Instruction

Instructional Practice	*System 44* Teachers: Prior Year	*System 44* Teachers: 2012–2012	Control Teachers: 2011–2012
Provide time in reading block for students to practice skills on their own.	41%	85%	62%
Develop reading skills using science and social studies texts.	35%	25%	62%
Teach whole-class reading lessons.	41%	75%	64%
Work one-to-one with students on reading.	59%	75%	29%
Work with small groups of students.	82%	85%	59%
Group students based on skill levels.	59%	85%	46%
Group students based on need for additional instruction in specific, targeted skills.	65%	70%	45%
Use supplementary reading materials.	82%	50%	72%
Use separate intervention materials for some students.	76%	35%	55%
Use reading software/technology.	29%	70%	45%
Use teacher-made materials.	35%	15%	41%
Use diagnostic tests to identify students who need reading intervention services.	82%	44%	69%
Teach specific strategies for decoding unfamiliar words.	65%	90%	38%
Teach decoding/phonics skills while reading stories.	71%	95%	41%
Students practice reading high frequency words for automaticity.	71%	75%	34%
Students use knowledge of root words, prefixes, and suffixes to decode new words.	59%	85%	55%
Students answer questions in writing after reading stories.	53%	50%	76%

Note. System 44 teachers $n = 18$. Control group teachers $n = 29$.

In spring 2012 the *System 44* teachers were asked to discuss the aspects of the program that they liked best. The teachers mentioned several software-related features: being able to fast track students through skills they had already mastered, the software's ability to individualize instruction according to students' needs and to revisit skills that students had not yet mastered, and the sense of accomplishment and empowerment students gained as they progressed through the software. The teachers also liked the SAM reports they could use to track student progress and group students for teacher-led instruction on specific skills, the variety of *System 44* library books, the high-interest *Sprint* books, the *Decodable Digest* and the *44Book*, and other program materials such as audiobooks and the *System 44 Teaching Guide*.

Factors That Facilitated Implementation

The 18 *System 44* teachers and 2 district staff who were interviewed for the evaluation identified 2 primary factors that facilitated program implementation: professional development and coaching from Scholastic staff and the *System 44* materials.

Professional Development. Scholastic staff provided an initial training in September 2011, follow-up training in November, and coaching support monthly from December through May 2012.

***System 44* Materials**. The SAM reports enabled the teachers to track student progress and identify needs. In addition, the software identified the specific skills each student needed to improve, implemented the *System 44* program fidelity, and provided instruction to every student at his or her skill level.

Barriers to Implementation

The teachers and district staff identified 3 primary barriers to implementation: problems with technology, problems with student behavior, and the difficulties inherent in learning how to teach a new program. Other challenges included scheduling, the disruption caused by transitioning between activities during the class period, minor issues related to program materials, and the inconveniences related to participating in the evaluation.

Technology Problems. Teachers faced many technology problems during the school year that hindered program implementation. For example, older computers froze and shut down, and microphone and headphone problems were prevalent (mostly due to wear and tear). One teacher had only one adequate computer in the classroom and students had to come in on a staggered schedule to receive individualized *System 44* instruction.

Problems With Student Behavior. Teachers at several schools reported difficulties managing student behavior when they had a large number of special education students, many of whom had behavior issues.

Learning to Teach *System 44*. Several teachers commented learning to teach using all of the *System 44* components was overwhelming, although many praised the well-organized *Teaching Guide*. Some teachers suggested that more training on how to use SAM report data to inform instruction would have been helpful.

Scheduling Issues. Scheduling concerns included the late start of the program in the school year (late October or early November 2011) and the resulting disruption of established student schedules and issues related to removing students from elective classes (e.g., art, music, and physical education). In addition, some classes served students with such a wide range of skills that grouping students for small-group instruction was difficult. One school did not have an adequate space to implement *System 44* and 8 to 10 students and a teacher were crammed into a former storage closet.

Disruption Caused by Transitioning Between Activities. A few teachers noted that the transitions between computer work, small-group instruction, and individual work were disruptive. The requirement that students spend approximately 20 minutes using the software each day exacerbated the problem—some teachers wanted students to be able to move from one activity to the next at natural breaking points such as after completing a lesson on the computer, a library book, or a worksheet.

Perceived Shortcomings of the *System 44* Materials. Some teachers believed that *System 44* could be improved by providing more writing activities. In addition, some teachers reported that they were not sufficiently familiar with the software to assist students when they

asked for help, and one teacher commented that the computer instruction was too repetitive. One teacher said that her students did not like the *Decodable Digest.*

Inconveniences Related to Participating in the Evaluation. Some principals expressed concern that the teachers did not have any input regarding student selection for *System 44,* whereas others felt frustrated that they could not serve all the students who might have benefitted from *System 44*. A few teachers noted that the testing window was different for *System 44* and *Read 180*, which created some confusion.

Effects of *System 44* on Student Outcomes

RMC Research used multilevel models to estimate the impact of *System 44* on spring 2012 student outcome scores while controlling for fall 2011 scores, special education status (learning disabled/not special education), ethnicity (African American/non-African American), English language learner status (English language learner/non-English language learner), and school level (elementary/middle). The same analytic model was run for each of 4 individually administered standardized tests: TOSREC, CTOPP Elision, TOWRE Sight Word Efficiency, and TOWRE Phonetic Decoding Efficiency. Subsequent analyses examined program impacts on SRI and SPI scores. Appendix D presents the fixed and random effects and intraclass correlations for each model in Exhibits D1 through D11.

Individual Test Outcomes

The data analysis revealed positive results for the overall sample. The treatment group students performed significantly better than the control group students on 2 of the 4 individual tests: CTOPP Elision and TOWRE Sight Word Efficiency. Exhibit 12 presents the impact estimates for the overall sample.

Exhibit 12
Individual Test Impact Estimates

	Estimated Impact					
Test	***n***	**Impact (β)**	***SE***	**Effect Size**	**Two-tailed *p***	**One-tailed *p***
TOSREC	315	-0.41	1.25	-0.03	.745	.373
CTOPP Elision	317	1.45	0.45	0.27	.002	.001
TOWRE Sight Word Efficiency	316	2.69	0.96	0.16	.006	.003
TOWRE Phonetic Decoding Efficiency	315	1.84	1.35	-0.09	.173	.087

The standardized effect sizes calculated using Glass's Δ method (with the impact estimate as the numerator and the control group standard deviation as the denominator) ranged from -0.03 on the TOSREC to 0.27 on the CTOPP Elision. The effect sizes on the CTOPP Elision and TOWRE Sight Word Efficiency tests were 0.27 and 0.16, respectively. Exhibit 13 displays descriptive statistics (means, standard deviations, and range) for the overall sample.

Exhibit 13
Individual Test Descriptive Statistics

	Treatment			Control		
Test	***M***	***SD***	**Range**	***M***	***SD***	**Range**
TOSREC[a]						
Pretest	14.79	13.56	1–64	15.99	13.03	1–47
Posttest	18.05	13.09	1–58	18.81	14.06	1–56
CTOPP Elision[b]						
Pretest	18.09	5.83	1–33	18.80	5.26	9–33
Posttest	19.35	6.11	2–34	18.47	5.43	9–33
TOWRE SWE[b]						
Pretest	51.14	15.14	1–80	53.85	14.14	5–80
Posttest	57.71	14.33	1–82	58.02	13.67	10–84
TOWRE PDE[b]						
Pretest	20.40	17.09	2–56	21.82	11.13	2–54
Posttest	23.71	11.65	2–64	24.05	11.93	3–55

Note. SWE = Sight Word Efficiency. PDE = Phonetic Decoding Efficiency. Treatment total *n* = 155. Control total *n* = 162.
[a]Assessment analyzed using normal curve equivalent scores. [b]Assessment analyzed using raw scores.

SRI and SPI Outcomes

Multilevel modeling on SRI and SPI outcomes also showed positive results for the overall sample. The impact was significantly greater for the treatment group students than the control group students on the SRI, $\beta = 80.82$, $p = .000$. The treatment group students performed similarly to the control group students on 2 of the SPI accuracy tests and 1 fluency test: SPI Letter Name Accuracy, SPI Sight Word Accuracy, and SPI Nonsense Word Fluency. However, the treatment group students performed significantly better than the control group students on SPI Nonsense Word Accuracy, $\beta = 1.61$, $p = .000$, and SPI Overall Accuracy, $\beta = 1.43$, $p = .035$. Treatment group students also performed marginally better than the control group students on SPI Sight Word Fluency, $\beta = 0.85$, $p = .065$, and SPI Overall Fluency, $\beta = 1.35$, $p = .091$. Exhibit 14 presents the impact estimates for the overall sample.

Exhibit 14
SRI and SPI Impact Estimates

Test	Estimated Impact					
	n	Impact (β)	*SE*	Effect Size	Two-tailed *p*	One-tailed *p*
SRI	287	80.82	18.73	0.32	.000	.000
SPI Letter Name Accuracy	279	0.03	0.06	0.06	.653	.327
SPI Sight Word Accuracy	279	-0.25	0.39	-0.05	.525	.263
SPI Sight Word Fluency	279	0.85	0.50	0.17	.065	.033
SPI Nonsense Word Accuracy	279	1.61	0.43	0.32	.000	.000
SPI Nonsense Word Fluency	279	0.42	0.47	0.10	.372	.186
SPI Overall Accuracy	279	1.43	0.67	0.16	.035	.018
SPI Overall Fluency	279	1.35	0.80	0.16	.091	.046

The standardized effect sizes calculated using Glass's Δ method ranged from -0.05 to 0.32 for SRI and SPI tests. The effect size on the SRI was 0.32. The effect sizes on tests of fluency—SPI Sight Word Fluency, SPI Nonsense Word Fluency, and SPI Overall Fluency—were all nonsignificant or marginally significant. The effect sizes on the 2 significant accuracy tests—SPI Nonsense Word Accuracy and SPI Overall Accuracy—were 0.32 and 0.16, respectively. Exhibit 15 displays descriptive statistics (means, standard deviations, and range) for the overall sample.

Exhibit 15
SRI and SPI Descriptive Statistics

	Treatment			Control		
Test	***M***	***SD***	**Range**	***M***	***SD***	**Range**
SRI						
Pretest	308.27	270.94	0–965	348.50	263.34	0–988
Posttest	427.70	267.80	0–1,025	381.20	256.42	0–1,166
SPI Letter Name Accuracy						
Pretest	10.82	0.47	8–11	10.70	1.30	1–11
Posttest	10.76	0.48	9–11	10.72	0.54	8–11
SPI Sight Word Accuracy						
Pretest	19.06	4.98	0–29	20.13	4.48	7–29
Posttest	22.00	5.30	5–30	23.01	4.92	8–29
SPI Sight Word Fluency						
Pretest	6.09	4.00	0–17	6.83	3.88	0–16
Posttest	8.35	4.93	0–20	8.16	5.14	0–19
SPI Nonsense Word Accuracy						
Pretest	16.12	4.36	5–28	16.37	4.56	5–25
Posttest	20.95	4.65	8–30	19.59	5.10	7–30
SPI Nonsense Word Fluency						
Pretest	5.10	3.30	0–13	5.04	3.11	0–12
Posttest	6.30	4.77	0–22	6.19	4.30	0–17
SPI Overall Accuracy						
Pretest	35.18	8.02	9–53	36.50	7.77	16–53
Posttest	42.95	9.02	16–57	42.61	8.75	20–57
SPI Overall Fluency						
Pretest	11.18	6.32	0–26	11.87	5.76	1–22
Posttest	14.65	8.62	0–40	14.35	8.40	1–35

Note. SRI Treatment total *n* = 147. Control total *n* = 140. SPI Treatment total *n* = 141. Control total *n* = 138.

Effects of *System 44* on Learning Disabled Students

The hierarchical linear models conducted for each of the 4 individual reading test outcomes and the SRI and SPI outcomes consistently revealed main effects for learning disability (see Appendix D). Specifically, learning disabled students scored significantly lower than non-learning disabled students on all tests except for the SPI Letter Name Accuracy test. Additional hierarchical models were conducted to determine the impact of *System 44* on the subsample of learning disabled students. Exhibit 16 presents the individual test impact estimates for the learning disabled sample, and Exhibit 17 displays descriptive statistics (means, standard deviations, and range) for this sample.

Exhibit 16
Individual Test Impact Estimates for Learning Disabled Students

	Estimated Impact					
Test	***n***	**Impact (β)**	***SE***	**Effect Size**	**Two-tailed *p***	**One-tailed *p***
TOSREC	163	0.91	2.15	0.07	.672	.336
CTOPP Elision	165	1.82	0.61	0.36	.004	.002
TOWRE Sight Word Efficiency	164	3.52	1.45	0.24	.017	.009
TOWRE Phonetic Decoding Efficiency	163	-0.24	2.01	-0.01	.907	.454

Multilevel modeling on individual tests revealed significant impacts on 2 of the 4 tests: CTOPP Elision and TOWRE Sight Word Efficiency. These tests were the same 2 that yielded significant impacts in the overall sample; however, the effect sizes for the learning disabled sample were larger than for the overall sample on both tests (0.36 compared to 0.27 on the CTOPP Elision test and 0.24 compared to 0.16 on the TOWRE Sight Word Efficiency test).

Exhibit 17
Individual Test Descriptive Statistics for Learning Disabled Students

	Learning Disabled				Non-Learning Disabled			
	Treatment		Control		Treatment		Control	
Test	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***
TOSREC[a]								
Pretest	8.31	10.43	11.18	11.86	22.28	12.94	20.80	12.42
Posttest	12.69	11.73	13.69	12.80	24.25	11.86	24.75	15.80
CTOPP Elision[b]								
Pretest	16.56	5.64	18.25	5.27	19.90	5.56	19.35	5.22
Posttest	17.95	6.18	17.53	5.12	21.01	5.63	19.41	5.59
TOWRE SWE[b]								
Pretest	12.55	11.97	14.21	13.23	24.68	13.84	27.02	13.33
Posttest	19.38	15.90	17.72	14.83	33.50	14.09	33.52	14.05
TOWRE PDE[b]								
Pretest	14.25	16.32	13.70	14.21	21.63	17.12	25.41	17.49
Posttest	17.11	17.17	17.43	18.29	30.09	19.83	29.65	18.83

Note. SWE = Sight Word Efficiency. PDE = Phonetic Decoding Efficiency. Learning disabled total *n* = 165. Non-learning disabled total *n* = 152. Both treatment and control included.
[a]Assessment analyzed using normal curve equivalent scores. [b]Assessment analyzed using raw scores.

The same hierarchical linear model was used to measure the impact of *System 44* on SRI and SPI tests in the learning disabled sample. Exhibit 18 presents the SRI and SPI test impact estimates for the learning disabled sample, and Exhibit 19 displays descriptive statistics (means, standard deviations, and range) for this sample.

Exhibit 18
SRI and SPI Test Impact Estimates for Learning Disabled Students

	Estimated Impact					
Test	***n***	**Impact (β)**	***SE***	**Effect Size**	**Two-tailed *p***	**One-tailed *p***
SRI	150	93.40	26.07	0.34	.001	.001
SPI Letter Name Accuracy	145	0.09	0.09	0.15	.336	.168
SPI Sight Word Accuracy	145	-0.13	0.58	-0.02	.829	.415
SPI Sight Word Fluency	145	1.27	0.53	0.28	.019	.010
SPI Nonsense Word Accuracy	145	1.84	0.62	0.36	.004	.002
SPI Nonsense Word Fluency	145	0.11	0.62	0.03	.857	.429
SPI Overall Accuracy	145	1.88	1.01	0.21	.064	.032
SPI Overall Fluency	145	1.47	1.05	0.19	.164	.082

Similar to the results on individual tests, the results of these analyses were consistent with impacts observed in the overall sample. Specifically, the impact was significantly greater for the treatment group students than the control group students on the SRI, $\beta = 93.40$, $p = .001$, and on SPI Nonsense Word Accuracy, $\beta = 1.84$, $p = .004$. In addition, the learning disabled treatment group performed significantly better than the learning disabled control group students on SPI Sight Word Fluency, $\beta = 1.27$, $p = .019$, a test that was only marginally significant in the overall sample.

To determine whether the effects of *System 44* were significantly greater for learning disabled students than non-special education students—that is, did *System 44* have a greater impact on learning disabled students than on non-special education students?—the moderating effects of special education status on treatment were analyzed. The results revealed no significant moderating effects. Similar tests of moderating effects were conducted for SRI and SPI outcomes and again no moderating effects of *System 44* and learning disabled status were found for any of the SRI and SPI outcomes. Thus although effects on learning disabled students were slightly stronger, the impact of *System 44* was statistically equivalent for learning disabled and non-special education students.

Exhibit 19
SRI and SPI Descriptive Statistics for Learning Disabled Students

	Learning Disabled				Non-Special Education			
	Treatment		Control		Treatment		Control	
Test	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***
SRI[a]								
Pretest	200.88	249.30	284.61	263.94	436.51	239.43	412.39	248.50
Posttest	323.65	265.34	299.53	274.18	551.94	213.48	462.87	209.16
SPI Letter Name Accuracy[b]								
Pretest	10.82	0.48	10.82	0.87	10.81	0.47	10.58	1.64
Posttest	10.78	0.48	10.70	0.60	10.73	0.48	10.75	0.47
SPI Sight Word Accuracy[b]								
Pretest	16.85	5.04	18.25	4.48	21.49	3.61	22.12	3.55
Posttest	19.88	5.70	21.20	5.34	24.34	3.61	24.94	3.55
SPI Sight Word Fluency[b]								
Pretest	4.78	3.17	5.69	3.66	7.52	4.35	8.04	3.78
Posttest	6.61	3.94	6.18	4.59	10.27	5.21	10.25	4.88
SPI Nonsense Word Accuracy[b]								
Pretest	14.68	4.25	15.11	4.14	17.72	3.92	17.70	4.63
Posttest	19.50	5.13	18.04	5.11	22.55	3.43	21.24	4.58
SPI Nonsense Word Fluency[b]								
Pretest	4.50	3.22	4.70	3.17	5.76	3.28	5.39	3.04
Posttest	5.14	4.26	5.35	4.05	7.58	5.00	7.07	4.41
SPI Overall Accuracy[b]								
Pretest	31.53	8.00	33.37	7.32	39.21	5.84	39.82	6.84
Posttest	39.38	9.81	39.24	8.93	46.90	6.00	46.18	7.01
SPI Overall Fluency[b]								
Pretest	9.28	5.73	10.39	5.64	13.28	6.33	13.43	5.49
Posttest	11.74	6.97	11.54	7.62	17.85	9.18	17.33	8.21

[a]SRI learning disabled total *n* = 150. SRI non-learning disabled total *n* = 137. [b]SPI learning disabled total *n* = 145. SPI non-learning disabled total *n* = 134.

Effects of *System 44* on Other Subgroups of Students

Although the most consistent demographic subgroup main effect observed across tests was among learning disabled students, the main effect of school level was significant for the TOSREC, on which elementary school students scored higher than middle school students, and the CTOPP Elision, TOWRE Decoding Efficiency, SPI Nonsense Word Accuracy, and SPI Nonsense Word Fluency tests, on which middle school students scored higher than elementary school students. Results also showed main effects of ethnicity and English language learner status. Specifically, on the CTOPP Elision and SPI Nonsense Word Accuracy tests, non-African American students scored higher than African American students. On the CTOPP Elision, non-English language learner students scored higher than English language learner students, and on the SPI Overall Fluency test, English language learner students scored higher than non-English language learner students. Exhibits E1 through E7 in Appendix E present mean pretest, posttest, and gain scores on individual reading tests, and on SRI and SPI Overall Accuracy and Fluency outcomes for additional subgroups of students.

RMC Research subsequently examined the moderating effects of demographic characteristics on *System 44*. The results showed that ethnicity did not moderate treatment effects—that is, the effects of *System 44* were similar for African American and non-African American students. School level did, however, moderate the effects of *System 44* on several tests: TOSREC, SRI, SPI Sight Word Accuracy, SPI Decoding Accuracy, and SPI Overall Accuracy. Exhibits 20 and 21 present the impact estimates for elementary schools and middle schools.

Exhibit 20
Individual Test Impact Estimates by School Level

	Estimated Impact					
Test	***n***	**Impact (β)**	***SE***	**Effect Size**	**Two-tailed *p***	**One-tailed *p***
Elementary						
TOSREC	171	-2.18	1.65	-0.15	.187	.094
CTOPP Elision	172	1.34	0.59	0.26	.025	.013
TOWRE Sight Word Efficiency	171	2.30	1.28	0.17	.075	.038
TOWRE Phonetic Decoding Efficiency	171	1.06	1.54	0.09	.491	.246
Middle						
TOSREC	144	2.75	1.49	0.20	.066	.033
CTOPP Elision	145	1.72	0.64	0.30	.008	.004
TOWRE Sight Word Efficiency	145	3.33	1.27	0.24	.010	.005
TOWRE Phonetic Decoding Efficiency	144	2.27	1.68	0.19	.179	.090

Specifically, the results showed that the *System 44* and control group students performed similarly on the TOSREC at the elementary school level, but the *System 44* students did marginally better than the control group students at the middle school level, $p = .066$. In the learning disabled sample, moderating effects of school level on treatment were also present, whereby *System 44* students in the learning disabled sample scored significantly higher than the control group students on the TOSREC, $p = .007$ (results not shown).

Exhibit 21
SRI and SPI Test Impact Estimates by School Level

Test	Estimated Impact					
	n	Impact (β)	*SE*	Effect Size	Two-tailed *p*	One-tailed *p*
Elementary						
SRI	172	30.14	24.21	0.13	.215	.108
SPI Letter Name Accuracy	159	0.11	0.09	0.18	.213	.107
SPI Sight Word Accuracy	159	-0.85	0.54	-0.16	.119	.060
SPI Sight Word Fluency	159	0.94	0.63	0.18	.135	.068
SPI Nonsense Word Accuracy	159	0.52	0.58	0.10	.379	.190
SPI Nonsense Word Fluency	159	0.42	0.62	0.10	.503	.252
SPI Overall Accuracy	159	-0.34	0.92	-0.04	.717	.359
SPI Overall Fluency	159	1.47	1.03	0.17	.155	.078
Middle						
SRI	145	132.03	24.89	0.49	.000	.000
SPI Letter Name Accuracy	120	-0.08	0.08	-0.21	.295	.148
SPI Sight Word Accuracy	120	0.51	0.55	0.12	.359	.180
SPI Sight Word Fluency	120	0.78	0.69	0.16	.261	.131
SPI Nonsense Word Accuracy	120	2.98	0.62	0.59	.000	.000
SPI Nonsense Word Fluency	120	0.27	0.73	0.06	.706	.353
SPI Overall Accuracy	120	3.61	0.97	0.46	.001	.001
SPI Overall Fluency	120	1.06	1.20	0.13	.378	.189

Appendix F provides a summary of individual, SRI, and SPI effect sizes by reading domain for the overall, learning disabled, and elementary and middle school samples.

Association Between Program Implementation and *System 44* Gains

The results of the implementation analyses showed some variation in implementation across the participating schools. To explore the possible effects of implementation on *System 44* impact, the evaluation team conducted nonexperimental analyses to address the following question: To what extent is program implementation associated with treatment impact? The data collected from the teacher surveys and classroom observations were used to develop 4 teacher-level variables (aggregated by school level) used to assess *System 44* program implementation in relation to test outcome gains: total number of times the teacher used *System 44* materials during small-group instruction, average number of students using *System 44* paperback books or the *Decodable Digest* during independent work time, instructional management, and instructional delivery.

The variable measuring the number of times the teacher used *System 44* materials was a sum across the fall, winter, and spring classroom observations. The average number of students using *System 44* paperback books or the *Decodable Digest* during independent work time was an average across the 3 classroom observation time points. The instructional management

variable comprised 2 measures (used flexible groups, used differentiated support) that were averaged across fall, winter, and spring. Similarly, the instructional delivery variable comprised 2 measures (executed the lesson well, actively tried to engage students) that were averaged across the 3 observation points.

Multilevel models identical to those used to measure impact—except with the 4 teacher-level variables (aggregated by school level) added to Level 2—were used to estimate the effects of implementation on the impact of the intervention on spring 2012 test outcomes. The addition of the teacher-level variables to the models revealed that none of the 4 variables (total number of times the teacher used *System 44* materials during small-group instruction, average number of students using *System 44* paperback books or the *Decodable Digest* during independent work time, instructional management, and instructional delivery) were associated with treatment effects for any of the tests.

Association Between Software Usage and *System 44* Gains

Because student use of the *System 44* software is an essential component of the intervention, the evaluation team examined how students' *System 44* software usage was related to improved individual test scores and SRI and SPI scores by analyzing the outcome gains in relation to the following factors: program exit date and total number of series topics completed. Exhibit G1 (in Appendix G) presents characteristics of students by exit status (i.e., early, end of year), and Exhibit H1 (in Appendix H) presents baseline equivalence data for these 2 groups. Exhibit G2 presents characteristics of students by total number of series topics completed, and Exhibit H2 presents baseline equivalence data for the 3 topic completion groups. Additionally, because a student's initial decoding status on the SPI determines the starting series in *System 44*, Exhibit G3 presents characteristics of students by initial decoding status, and Exhibit H3 presents baseline equivalence data by initial decoding status. Appendix I presents *System 44* software usage descriptive data by student subgroups.

Program Exit Date

The *System 44* program was intended to be implemented for a full year, and the majority of students (92%) stayed in the program through the end of the school year (i.e., May or June 2012). Of the 13 students who exited *System 44* prior to the end of year, 1 completed the program in February, 6 completed the program in March, and 4 completed the program in April, and 2 students left the program in March and April but did not complete the program.[5] To examine differences in the characteristics of the students who completed the program early versus at the end of the year, the evaluation team conducted baseline equivalence tests between the 2 groups (see Exhibit F1).

The students who stayed in the *System 44* program through the end of the year had significantly lower pretest scores than the students who completed the program early on all tests except CTOPP Elision (which was marginally significant) and SPI Letter Name Accuracy. The only demographic characteristic that differed across the 2 groups was ethnicity—that is, those students who stayed in the program through the end of the year were significantly more likely to be African American than the students who completed the program early. Students who stayed in the program through the end of the year also were less likely to be learning disabled than students who exited early, but these differences were only marginally significant.

To address whether the timing of program exit factored into students' gains, the evaluation team used repeated measures analysis of variance (ANOVA) models to assess differences between

[5]These 2 students who exited the program prior to the end of year without completing the program were excluded from analyses involving program exit date status.

program completion categories (i.e., early, end of year) and change in outcomes. The analyses revealed that early completers made significantly greater gains than end-of-year completers on 1 test—SPI Nonsense Word Fluency, $F(1, 146) = 4.76$, $p < .05$.

Topic Completion

The *System 44* students were expected to complete all 160 topics covered in the 25 series that compose the software component of the program. The analysis conducted by the evaluation team revealed that 21 of the 155 *System 44* students (14%) completed all 160 topics (average number of topics completed: 77). The students were categorized by the number of topics completed: fewer than 40 topics ($n = 52$), between 40 and 100 topics ($n = 57$), and between 100 and 160 topics ($n = 46$). Repeated measures ANOVA models were used to assess differences between the 3 topic completion groups and change in outcomes.

The ANOVA results showed significant differential gains between the 3 groups on the following tests: TOSREC ($p < .05$), SPI Nonsense Word Fluency ($p < .05$), and SPI Overall Fluency ($p < .05$). Specifically, those students who completed fewer than 40 topics or between 40 and 100 topics showed significantly less gain on these 3 tests than the students who completed between 100 and 160 topics. Additional analyses examined differences between these 3 groups on baseline characteristics (see Exhibit F2). Those students who completed fewer than 100 topics had significantly lower pretest scores than the students who completed more than 100 topics on all tests with the exception of SPI Letter Name Accuracy. Further, students who completed fewer than 40 topics had significantly lower pretest scores on all but 2 of these tests—TOSREC and CTOPP Elision—than the students who completed between 40 and 100 topics. Tests of demographic differences between the 3 topic completion groups revealed that students who completed fewer than 100 topics were significantly more likely to be learning disabled than students who completed between 100 and 160 topics. On average, students with learning disabilities completed 62 topics compared to non-special education students who completed 95 topics. Otherwise, the 3 topic completion groups were demographically similar.

Additional analyses examined how the 3 topic completion groups progressed on the *System 44* software. ANOVA results showed significant differences between groups on the total number of hours spent on the *System 44* software: students who completed fewer than 40 topics spent significantly fewer hours on the software than students who completed between 40 and 100 topics or between 100 and 160 topics ($M = 14.60$ hours, $M = 23.19$ hours, and $M = 26.18$ hours for the 3 groups, respectively).

Initial Decoding Status

A student's initial decoding status on the SPI determines the starting series in *System 44* and is an indicator of students' initial reading ability. Two 2 students were classified as pre-decoders, 71 students as beginning decoders, and 82 students as developing decoders at baseline. Beginning decoders and developing decoders were compared on the number of total topics completed. Additionally, repeated measures ANOVA models were used to assess differences between beginning and developing decoders and change in outcomes; the 2 students classified as pre-decoders were excluded from these group comparison analyses.

As would be expected, students initially classified as beginning decoders on the SPI performed lower than students classified as developing decoders when they began *System 44*. Specifically, beginning decoders had significantly lower pretest scores than developing decoders on all but 3 tests: TOSREC, CTOPP Elision, and SPI Letter Name Accuracy. *System 44* progress also differed between the 2 groups: beginning decoders were significantly less likely than developing decoders to finish the program early (18% versus 49%) and

completed significantly fewer *System 44* topics than developing decoders (*M* = 48.37 topics and *M* = 102.76 topics, respectively). However, there was no difference between groups in the total number of hours spent on the software (*M* = 22.13 hours and *M* = 20.68 hours for beginning and developing decoders, respectively).

The ANOVA results showed significant differential gains between beginning and developing decoders on the following tests: SPI Sight Word Fluency ($p < .05$), and SPI Overall Fluency ($p < .05$). Specifically, beginning decoders had significantly greater gains on these 2 fluency tests than developing decoders. In contrast, a marginally significant ($p = .051$) difference existed on the CTOPP Elision, on which developing decoders demonstrated greater gains than beginning decoders.

Conclusion and Discussion

The purpose of this evaluation was to assess the impact of *System 44* in a low-income urban district that serves a large population of struggling readers and to expand the existing research on students with learning disabilities. Of the 368 students in Grades 4–8 who met the eligibility criteria for *System 44*, 187 were randomly assigned to the treatment group and 181 were randomly assigned to the control group. Nine students were deemed ineligible for the intervention subsequent to random assignment. The random assignment and analytic sample treatment and control groups were equivalent in terms of sex, eligibility for free or reduced-price meals, English proficiency, special education status, ethnicity, and baseline MEAP scores. Of the students who were eligible for the program, 155 treatment and 162 control group students received the allocated intervention or control group condition as planned. Half of the randomly assigned students (n = 185) were learning disabled (97 treatment and 88 control).

Answers to Research Questions

The evaluation team analyzed the data collected to address the 7 research questions:

1. **What contextual factors are involved in the implementation of *System 44* (i.e., factors that promote or hinder successful implementation of the program)?**

As a group, the *System 44* teachers had more teaching experience, were more likely to have an advanced degree, and were more likely to have full teaching certification than the control group teachers. Overall, the treatment group teachers gave the *System 44* professional development above average ratings, with mean ratings somewhat higher in spring 2012 than in fall 2011. Teachers were satisfied with the quantity and quality of the training and believed that it prepared them to use the *System 44* program in their classrooms. In response to 10 questions designed to test their knowledge of *System 44* program components, on average the teachers correctly answered 65% of the questions in fall 2011 and 76% of the questions in spring 2012.

The evaluation team assessed the fidelity of *System 44* implementation through classroom observations and teacher self-report (surveys and interviews). The adequacy of classroom setup (functioning computers, headsets, and microphones; accessible materials) improved from 36% of the classrooms in fall 2011 to 67% in the winter and 78% in spring 2012. The proportion of classrooms providing at least 55 minutes of instruction each day ranged from 72% to 82% over time. During teacher-led small-group instruction, the observers most frequently noted the use of the *System 44* flip chart, the *Decodable Digest,* and the *System 44* paperback books. During independent work time, the observers most frequently noted the use of the *System 44* paperback books, *System 44* audiobooks, and SAM worksheets.

The observers rated instructional management highest in the fall and instructional delivery highest in winter 2012. Ratings on 2 key instructional management items were lowest in the fall ("use flexible groups for students based on instructional needs" and "differentiate support based on students' needs"). At the time of the spring 2012 interviews, two thirds of the teachers reported that they had used the SAM Differentiated Instruction Report at least once a week to identify topics for small-group instruction.

The *System 44* teachers and district staff identified 3 primary barriers to implementation: problems with technology, problems with student behavior, and difficulties inherent in learning how to teach a new program. The most frequent technology problems were older computers that had difficulty running *System 44* and problems with the student headsets and microphones.

2. **What do teachers report to be the most valuable features of *System 44?* Does this vary for different subgroups of students?**

Prior to the start of the school year the teachers expected *System 44* to be more effective than the reading intervention they had used the prior year; at the end of the school year the teachers gave *System 44* significantly higher ratings in terms of its perceived effectiveness for teaching phonemic awareness and phonics than the prior programs. When asked which features of *System 44* they liked best, the teachers mentioned several software-related features: being able to fast track students through skills they had already mastered, the software's ability to individualize instruction according to students' needs and to revisit skills that students had not yet mastered, and the sense of accomplishment and empowerment students gained as they progressed through the software. The teachers also liked the SAM reports they could use to track student progress and group students for teacher-led instruction on specific skills, and the program materials.

3. **What are the effects of *System 44* on student outcomes? Specifically, how do changes in word-level accuracy, fluency, and reading comprehension achieved by *System 44* students compare to changes achieved by the students in the services-as-usual control group?**

The findings revealed significant intervention effects on the CTOPP, TOWRE Sight Word Efficiency, SRI, and 2 of the SPI accuracy tests (Nonsense Word and Overall Accuracy). No significant effects were found on the TOSREC, TOWRE Decoding Efficiency, SPI Letter Name Accuracy, SPI Sight Word Accuracy or the 3 SPI Fluency tests.

4. **What are the effects of *System 44* on outcomes of students with learning disabilities? Specifically, how do changes in outcomes achieved by *System 44* students with learning disabilities compare to changes achieved by students with learning disabilities in the services-as-usual control group?**

The findings revealed similar intervention effects for the learning disabled sample on the CTOPP, TOWRE Sight Word Efficiency, SRI, and SPI Nonsense Word Accuracy. In addition, in the sample of learning disabled students, results revealed a significant effect on the SPI Sight Word Fluency test that was not present in the overall sample. As with the impact on the overall sample, no significant effects were found on the TOSREC, TOWRE Decoding Efficiency, SPI Letter Name Accuracy, SPI Sight Word Accuracy or the other 2 SPI Fluency tests. In addition, SPI Overall Accuracy was not significant in the learning disabled sample.

5. **How does *System 44* differentially affect other subgroups of students? Specifically, how do changes in word-level accuracy, fluency, and reading comprehension achieved by specific subgroups of *System 44* students (based on gender, ethnicity, economic status, English language proficiency, special education classification, and initial reading ability), compare to changes achieved by equivalent students who did not use the program?**

Analyses on subgroups of students revealed several significant differences between subgroups. Specifically, elementary school students scored higher than middle school students on the TOSREC and TOWRE Sight Word Efficiency tests, and middle school students scored higher than elementary school students on the CTOPP Elision, SPI Nonsense Word Accuracy, and SPI Nonsense Word Fluency tests. Two tests showed differences between African American and non-African American students, and 2 tests showed differences between English language learners and non-English language learners. However, the percentages of students in the non-African American and English language learner subsamples were relatively small, and thus

these findings should be interpreted with caution. Additional tests revealed that school level moderated the intervention effects. Specifically, several tests (TOSREC, SRI, SPI Nonsense Word Accuracy, and SPI Overall Accuracy) revealed significant or marginally significant effects for middle school students but not for elementary school students.

6. What is the association between *System 44* effects and program implementation—are changes in *System 44* participants' word-level accuracy, fluency, and reading comprehension skills associated with variation in program implementation?

The evaluation team used data collected from teacher surveys and classroom visits to develop 4 teacher-level variables for assessing the extent to which program implementation is associated with program impact: total number of times the teacher used *System 44* materials during small-group instruction, average number of students using *System 44* paperback books or the *Decodable Digest* during independent work time, instructional management, and instructional delivery. None of these implementation variables were associated with treatment effects.

The evaluation team analyzed gains on each outcome measure in relation to program exit date and total number of topics completed. Students were grouped into 2 exit date categories: early (prior to May 2012), and end of year (May or June 2012). Not surprisingly, students who stayed in the *System 44* program through the end of the school year had significantly lower pretest scores than students who completed the program. Students in the end-of-year group were also significantly more likely to be in special education than students in the early completion group. Repeated measures ANOVA analyses revealed that exit date did not factor into students' gains except for one assessment—the SPI Nonsense Word Fluency subtest, on which students who completed the program early made significantly greater gains than students who stayed in the *System 44* program through the end of the school year.

Approximately 14% of the *System 44* students completed all 160 topics, and the average number of topics completed was 77. Students were grouped by number of topics completed (fewer than 40 topics, between 40 and 100 topics, and between 100 and 160 topics), and baseline equivalence tests showed significant differences between the 3 groups on all but 1 pretest measure. Repeated measures ANOVA analyses examined differences between 3 topic completion groups. Analyses revealed differential effects between groups on 3 outcomes. Specifically, students who completed fewer than 100 topics made significantly lower gains on TOSREC, SPI Nonsense Word Fluency, and SPI Overall Fluency than students in the other completion groups.

7. Does progress in the *System 44* software vary by students' special education classification and initial reading ability?

Students' progress in the *System 44* software varied both by their special education classification and their initial reading ability. Students with learning disabilities completed fewer topics than non-special education students (62 topics versus 95 topics). Learning disabled students also fast-tracked fewer topics than non-special education students (24 topics versus 49 topics). Learning disabled students were less likely—though the results were only marginally significant—to finish the program early (only 27% of the students who exited early were learning disabled compared to 56% of students who were in the program until the end of the year).

By the end of the year, students initially classified as beginning decoders completed an average of 48 topics compared to students initially classified as developing decoders who completed an average of 103 topics. However, time spent on *System 44* software was similar between the 2 groups. This finding is explained in part by the number of topics fast tracked by developing

decoders; on average, students initially classified as developing decoders fast-tracked 60 topics, and students initially classified as beginning decoders fast-tracked only 8 topics.

Discussion

The evaluation findings suggest that *System 44* is effective in improving reading skills for both struggling readers in the general population of students in Grades 4 through 8 and struggling readers who have learning disabilities. The evaluation findings also indicated that *System 44* had stronger effects for middle school students than for elementary school students, especially on measures of decoding accuracy, comprehension, and general reading achievement. One of the distinguishing implementation characteristics between elementary and middle schools in the district was class size and adherence to the *System 44* model. The elementary schools that participated in the evaluation had far fewer students in the classroom than the middle schools. As a result, rotations and group sizes in elementary schools tended to be loosely structured. Future evaluations of *System 44* might examine the extent to which group size in the classroom affects program impacts and whether there is an optimal group size that facilitates implementation of *System 44* and consequently student impact.

An important note about the evaluation is that the sample included struggling readers who were far below grade level in reading. Whereas phonemic awareness gains were significant and sight word fluency gains were marginally significant at the elementary school level, gains on more advanced reading skills including phonics, reading comprehension, and general reading achievement were significant at the middle school. The majority of middle school students began *System 44* as developing decoders, whereas the majority of elementary school students began *System 44* as beginning decoders. Thus differential effects of *System 44* on school level are likely attributed to the students' initial reading ability. Specifically, the elementary school students made gains on more rudimentary reading skills necessary for subsequently acquiring fluency and comprehension skills. The fact that on average students in higher grades completed more *System 44* topics also supports that students' gains were consistent with their advancement in the *System 44* software. A follow-up study that examines continued progress of students in the *System 44* program would provide additional support for these findings.

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Appendix A
Baseline Equivalence of Analytic Sample Treatment and Control Groups

Exhibit A1
Baseline Equivalence of Treatment and Control Groups on Outcome Measures and Demographic Characteristics

	Treatment Group				Control Group				
Baseline Characteristic	***n***	***n* miss.**	***M***	***SD***	***n***	***n* miss.**	***M***	***SD***	***p***
TOSREC[a]	154	1	14.86	13.54	162	0	15.99	13.03	.451
CTOPP Elision[b]	155	0	18.09	5.83	162	0	18.80	5.26	.258
TOWRE Sight Word Efficiency[b]	154	1	51.14	15.14	162	0	53.85	14.14	.101
TOWRE Phonetic Decoding Efficiency[b]	155	0	20.41	11.05	162	0	21.69	11.23	.310
SRI[c]	155	0	303.63	270.36	162	0	345.42	267.21	.167
SPI Letter Name Accuracy[d]	155	0	10.82	0.46	162	0	10.67	1.43	.217
SPI Sight Word Accuracy[d]	155	0	19.10	4.99	162	0	20.00	4.58	.094
SPI Sight Word Fluency[d]	155	0	6.17	4.11	162	0	6.76	3.96	.198
SPI Nonsense Word Accuracy[d]	155	0	16.26	4.44	162	0	16.31	4.56	.921
SPI Nonsense Word Fluency[d]	155	0	5.12	3.34	162	0	5.13	3.19	.971
SPI Overall Accuracy[d]	155	0	35.36	8.12	162	0	36.31	7.85	.289
SPI Overall Fluency[d]	155	0	11.29	6.44	162	0	11.89	5.92	.389
Michigan Educational Assessment Program[d]	133	22	557.42	123.60	141	21	565.81	129.57	.584
Female	155	0	.39	.49	162	0	.40	.49	.889
Black	155	0	.80	.40	162	0	.77	.42	.458
Hispanic	155	0	.10	.30	162	0	.13	.34	.358
FRL	155	0	.95	.20	162	0	.96	.19	.716
SPED Status	155	0	.54	.04	162	0	.50	.04	.457
ELL Status	155	0	.04	.29	162	0	.06	.23	.482

[a]Pretest assessment was analyzed using normal curve equivalent scores that ranged from 1 to 99.
[b]Assessment was analyzed using raw scores. [c]Assessment was analyzed using Lexile scores. [d]Assessment was analyzed using scaled scores.

Appendix B
Data Collection Instruments

System 44 Teacher Survey

Saginaw Public Schools

September 2011

About This Survey

This survey contains questions about your background and questions about the *System 44* program that you will be implementing this school year. Your responses are important in helping us understand which factors contribute to the success of the program and what issues need to be addressed.

Please write your answers directly on the survey by checking the appropriate boxes or by writing your response in the space provided. Your individual responses will be kept confidential and will not be shared with your principal or other school or district personnel. Summary data from this survey will be shared with Scholastic staff to assist in planning for *System 44* implementation.

We expect it will take approximately 15 minutes to complete the survey.

Thank you very much for your help.

Prepared by:
RMC Research Corporation
111 SW Columbia Street
Suite 1200
Portland, OR 97201

Teacher Background

1. Are you female or male?

   ❒1 Female

   ❒2 Male

2. How many years have you worked as a full-time teacher in public schools*? Write in the number of years below. Count part of a year as one year.*

	Number of years
a. Total number of years as a teacher (do not include student teaching)	_____
b. Total number of years as a teacher in Saginaw Public Schools	_____
c. Total number of years as a teacher at your current school	_____

3. What is the *highest* degree you have obtained as of September 2011? *Mark (X) only one box.*

   ❒1 Bachelor's (B.A., B.S., B.E., etc.)

   ❒2 Master's degree (M.A., M.A.T., M.B.A., M.Ed., M.S., etc.)

   ❒3 Education specialist or certification at least one year beyond master's level

   ❒4 Doctorate or professional degree (Ph.D., Ed.D., M.D., L.L.B., J.D., D.D.S.)

   ❒5 Other (please specify: _____)

4. Which of the following describes the teaching certificate(s) you currently hold in Michigan? *Mark (X) all that apply.*

   ❒a Temporary Teacher Employment Authorization

   ❒b Interim Teaching Certificate

   ❒c Provisional Certificate

   ❒d Professional Education Certificate

5. I have used *System 44* in my classroom prior to this year.

   ❒1 Yes ❒2 No

6. I have used *Read 180* in my classroom prior to this year.

   ❒1 Yes ❒2 No

Professional Development

7. Have you had training or support (e.g., in-classroom coaching, online support) provided by a Scholastic representative or other experienced *System 44* user prior to today's training? *Mark (X) all that apply.*

- ❒a Have not received any training in *System 44* prior to today's training
- ❒b Attended a similar *System 44* training held in a prior year
- ❒c Received other support for *System 44* from a Scholastic representative in a prior year
- ❒d Received other support from another experienced *System 44* user in a prior year
- ❒e Other (please specify: _____)

8. Please rate the extent to which you agree or disagree with the following statements regarding the *System 44* training activities provided today*. Mark (X) only one box per row.*

	Strongly disagree				**Strongly agree**
a. The teacher training on *System 44* prepared me to use the program in my classroom.	❒1	❒2	❒3	❒4	❒5
b. I am pleased with the *amount* of *System 44* professional development I received.	❒1	❒2	❒3	❒4	❒5
c. I am pleased with the *quality* of *System 44* professional development I received.	❒1	❒2	❒3	❒4	❒5

Instructional Practices

9. Please indicate which of the following teaching strategies and materials you used **with your struggling readers** last year (2010–2011)*. Mark (X) only one box per row.*

If you did not teach last year but taught in previous years, please describe your use of these teaching strategies and materials when you last taught. If this is your first year teaching, please skip to Question 12.

	Central to my reading instruction	**Small part of my reading instruction**	**Not Part of my reading instruction**
Instruction			
a. Provide time in reading block for students to practice skills on their own.	❒1	❒2	❒3
b. Provide materials for at-home practice of skills introduced in class.	❒1	❒2	❒3
c. Provide extra reading instructional time for struggling readers.	❒1	❒2	❒3
d. Include writing opportunities in reading instruction.	❒1	❒2	❒3
e. Build spelling practice into reading instruction.	❒1	❒2	❒3
f. Develop reading skills using science and social studies texts.	❒1	❒2	❒3

	Central to my reading instruction	Small part of my reading instruction	Not Part of my reading instruction
Grouping			
g. Teach whole class reading lessons.	❒1	❒2	❒3
h. Work one-to-one with students on reading.	❒1	❒2	❒3
i. Work with small groups of students.	❒1	❒2	❒3
j. Group students based on skill levels.	❒1	❒2	❒3
k. Group students based on need for additional instruction in specific, targeted skills.	❒1	❒2	❒3
l. Group students based on mixed abilities (pairs or cooperative groups).	❒1	❒2	❒3
Reading Materials			
m. Use core reading series.	❒1	❒2	❒3
n. Use supplementary reading materials.	❒1	❒2	❒3
o. Use trade books.	❒1	❒2	❒3
p. Use books that are easy to decode.	❒1	❒2	❒3
q. Use separate intervention materials for some students.	❒1	❒2	❒3
r. Use reading software/technology.	❒1	❒2	❒3
s. Use teacher-made materials.	❒1	❒2	❒3
Assessments			
t. Use test results to organize instructional groups.	❒1	❒2	❒3
u. Use informal reading inventories.	❒1	❒2	❒3
v. Conduct miscue analysis, analyzing errors students make while reading aloud.	❒1	❒2	❒3
w. Use tests to determine progress on skills.	❒1	❒2	❒3
x. Use diagnostic tests to identify students who need reading intervention services.	❒1	❒2	❒3

10. Please indicate which of the following reading instructional activities you used **with your struggling readers** last year (2010–2011). *Mark (X) only one box per row.*

If you did not teach last year but taught in previous years, please describe your use of these reading instructional activities when you last taught. If this is your first year teaching, please skip to Question 12.

	Central to my reading instruction	Small part of my reading instruction	Not Part of my reading instruction
Reading Text			
a. Students reread familiar text.	❒1	❒2	❒3
b. Students confirm or revise predictions after reading.	❒1	❒2	❒3
c. Students generate their own questions about text material.	❒1	❒2	❒3
d. Students identify their comprehension break-downs and use fix-up strategies with a partner.	❒1	❒2	❒3
e. Students orally summarize main events in stories and informational texts.	❒1	❒2	❒3
f. Students use graphic and semantic organizers to track information.	❒1	❒2	❒3
Work With Sounds and Words			
g. I teach specific strategies for decoding unfamiliar words.	❒1	❒2	❒3
h. I teach decoding/phonics skills while reading stories.	❒1	❒2	❒3
i. Students practice reading high frequency words for automaticity.	❒1	❒2	❒3
j. Students use knowledge of root words, prefixes, and suffixes to decode new words.	❒1	❒2	❒3
k. Students work with prefixes and suffixes to change the meaning of words.	❒1	❒2	❒3
l. Students use context clues to identify unknown words.	❒1	❒2	❒3
m. I discuss new and unusual words before reading.	❒1	❒2	❒3
Other Techniques			
n. Students answer questions in writing after reading stories.	❒1	❒2	❒3
o. Students select books from the library for independent reading.	❒1	❒2	❒3
p. Students are given time to read on their own for enjoyment.	❒1	❒2	❒3

11. Please rate the extent to which you agree or disagree with the following statements. *Mark (X) only one box per row.*

My struggling students last year received enough instruction and practice in the following areas to make sufficient gains in reading.	**Strongly disagree**				**Strongly agree**
a. phonemic awareness	❒1	❒2	❒3	❒4	❒5
b. phonics	❒1	❒2	❒3	❒4	❒5
c. fluency	❒1	❒2	❒3	❒4	❒5
d. vocabulary	❒1	❒2	❒3	❒4	❒5
e. comprehension	❒1	❒2	❒3	❒4	❒5

12. Please rate the extent to which you agree or disagree with the following statements. *Mark (X) only one box per row.*

I think *System 44* will be effective this year in helping my students with . . .	**Strongly disagree**				**Strongly agree**
a. phonemic awareness.	❒1	❒2	❒3	❒4	❒5
b. phonics.	❒1	❒2	❒3	❒4	❒5
c. fluency.	❒1	❒2	❒3	❒4	❒5
d. vocabulary.	❒1	❒2	❒3	❒4	❒5
e. comprehension.	❒1	❒2	❒3	❒4	❒5

System 44 Concepts

The following questions are intended to capture your current understanding of the System 44 program based on either prior knowledge of the program or what you learned in the training today. This information will help us to understand areas that the training did or did not address, and will help guide future training sessions.

13. Which of the following is NOT a skill that is measured by the Scholastic Phonics Inventory? *Mark (X) only one box.*

❒1 Identify sight words

❒2 Recognize letter names

❒3 Identify nonsense words

❒4 Improve phonological awareness

14. Which of the following *System 44* program components is designed to provide students with written practice in applying the skills they are learning in the software? *Mark (X) all that apply.*

- ❒a Decodable Digest
- ❒b 44Book
- ❒c Flip chart
- ❒d SAM Practice Pages

15. Which of the following *System 44* program components is designed to provide reading fluency practice for students? *Mark (X) all that apply.*

- ❒a Decodable Digest
- ❒b *System 44* Library Books
- ❒c *System 44* Audiobooks
- ❒d Success Strand

16. Scholastic *Reading Counts!* is . . . *Mark (X) only one box.*

- ❒1 the *System 44* adaptive software that continuously collects data on student performance.
- ❒2 a set of quizzes that measure comprehension of each *System 44* paperback book.
- ❒3 a set of progress monitoring tools given at the end of each *System 44* series.
- ❒4 a set of motivational videos that students can play when they have successfully completed a *System 44* series of lessons.

17. Which of the following is NOT a feature of *System 44*? *Mark (X) only one box.*

- ❒1 Using SAM reports for instructional grouping
- ❒2 Teacher-led instruction in small groups
- ❒3 Library books that reinforce specific phonics skills
- ❒4 Successful completion of every software lesson

18. Phonemic awareness is . . . *Mark (X) all that apply.*

- ❒a the foundation for phonics instruction.
- ❒b the ability to hear and manipulate individual sounds in spoken words.
- ❒c the same as phonological awareness.
- ❒d the recognition that sentences consist of separate words.

19. The Scholastic Achievement Manager (SAM) can . . . *Mark (X) all that apply.*

❒a help teachers form instructional groups for students who need work on the same skills.

❒b provide detailed, diagnostic information about student strengths and weaknesses.

❒c allow the teacher to monitor students' ongoing progress on the software.

❒d provide downloadable assessments for various reading skills.

20. Select the description from the right column that matches each of the four *System 44* Zones listed on the left and enter the matched number in the box:

a. Fluency Zone	☐	1	Explicit instruction in the 44 sounds of the English language and the letters that make each sound
b. Spelling Zone	☐	2	Reading of decodable text with a focus on comprehension
c. Word Zone	☐	3	Instruction and practice in specific spelling rules
d. Smart Zone	☐	4	Modeling and practice in blending sounds

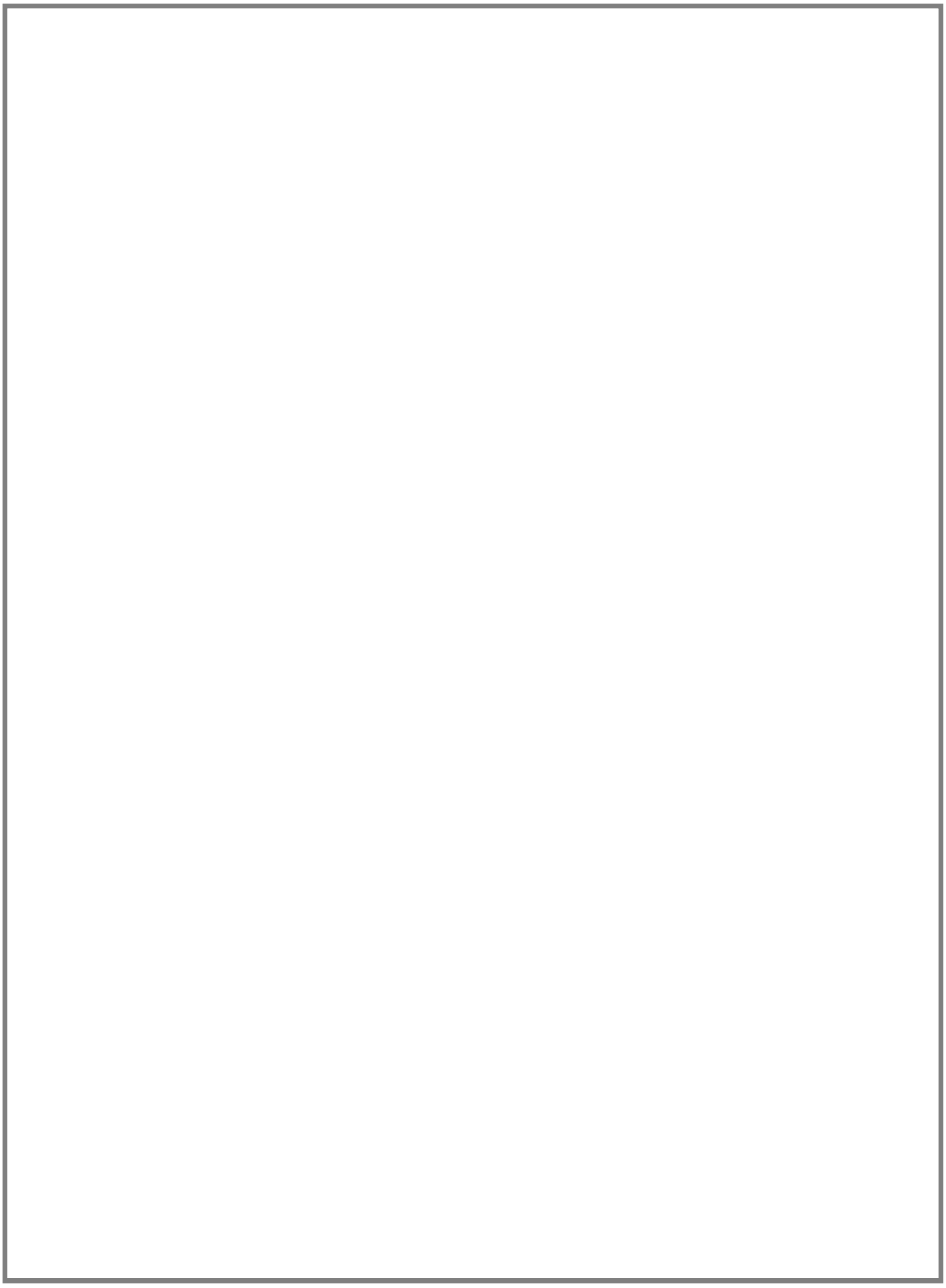
21. Select the description from the right column that matches each of the four *System 44* strands of instruction listed on the left and enter the matched number in the box:

a. Success	☐	1	Builds automatic recognition of high frequency words
b. Word Strategies	☐	2	Read passages to build on skills and improve comprehension
c. The Code	☐	3	Practice in syllable strategies and word analysis
d. Sight Words	☐	4	Direct instruction and practice in letter-sound correspondences

22. Please rate the extent to which you agree or disagree with the following statements regarding the *System 44* program*. Mark (X) only one box per row.*

I understand . . .	**Strongly disagree**				**Strongly agree**
a. how the *System 44* software works to individualize instruction and practice for students.	❒1	❒2	❒3	❒4	❒5
b. what to do during small group instruction.	❒1	❒2	❒3	❒4	❒5
c. how to use SAM to group students for small group instruction.	❒1	❒2	❒3	❒4	❒5
d. when to use the Decodable Digest, 44Book, and *System 44* library books for student practice.	❒1	❒2	❒3	❒4	❒5
e. how to monitor student progress in *System 44.*	❒1	❒2	❒3	❒4	❒5

23. Some questions I have about *System 44* are . . .



System 44 Teacher Survey

Saginaw Public Schools

May 2012

About This Survey

This survey contains questions about your background and questions about the *System 44* program that you implemented this school year. Your responses are important in helping us understand which factors contribute to the success of the program and what issues need to be addressed.

Please write your answers directly on the survey by checking the appropriate boxes or by writing your response in the space provided. Your individual responses will be kept confidential and will not be shared with your principal or other school or district personnel. Summary data from this survey will be shared with Scholastic staff to assist in understanding *System 44* implementation.

We expect it will take approximately 15 minutes to complete the survey.

Thank you very much for your help.

Prepared by:
RMC Research Corporation
111 SW Columbia Street
Suite 1200
Portland, OR 97201

Professional Development

1. Please rate the extent to which you agree or disagree with the following statements regarding the System 44 training activities provided this year. Mark (X) only one box per row.

	Strongly disagree				Strongly agree	N/A
a. The group training on *System 44* prepared me to use the program in my classroom.	❒1	❒2	❒3	❒4	❒5	❒6
b. The individual support from Scholastic during the year enhanced my skills in using *System 44* in my classroom.	❒1	❒2	❒3	❒4	❒5	❒6
c. The individual support from district staff during the year enhanced my skills in using *System 44* in my classroom.	❒1	❒2	❒3	❒4	❒5	❒6
d. I am pleased with the *amount* of *System 44* professional development I received.	❒1	❒2	❒3	❒4	❒5	❒6
e. I am pleased with the *quality* of *System 44* professional development I received.	❒1	❒2	❒3	❒4	❒5	❒6

2. Which training or support topics were most helpful to you as you implemented *System 44*?

3. What additional *System 44* training or support would have been helpful?

Implementation of System 44 Components

4. How frequently did you use each of the following System 44 components?

	Rarely or never		Once a week		Every day
a. Whole class instruction in *System 44*	❒1	❒2	❒3	❒4	❒5
b. Teaching Guide (bound copy)	❒1	❒2	❒3	❒4	❒5
c. 44 Book or Decodable Digest	❒1	❒2	❒3	❒4	❒5
d. SAM reports	❒1	❒2	❒3	❒4	❒5
e. Small group instruction: SMART lessons	❒1	❒2	❒3	❒4	❒5
f. Individual student support (outside of small group)	❒1	❒2	❒3	❒4	❒5

5. How frequently did you supplement your *System 44* instruction with the following materials?

	Rarely or never		Once a week		Every day
a. SAM practice pages	❒1	❒2	❒3	❒4	❒5
b. SAM book expert (identify appropriate books)	❒1	❒2	❒3	❒4	❒5
c. Flip chart	❒1	❒2	❒3	❒4	❒5
d. Letter manipulatives	❒1	❒2	❒3	❒4	❒5
e. *System 44* audiobooks	❒1	❒2	❒3	❒4	❒5
f. Reading Counts! quizzes	❒1	❒2	❒3	❒4	❒5
g. Sound and Articulation DVD	❒1	❒2	❒3	❒4	❒5
h. Conference Guides (for 44 Library books)	❒1	❒2	❒3	❒4	❒5
i. Scholastic Red routines	❒1	❒2	❒3	❒4	❒5
j. Other materials that were not *System 44*	❒1	❒2	❒3	❒4	❒5

6. On average, how many minutes did each student use *System 44* on the computer each day?

_____

How many computers were available in your classroom for *System 44* instruction? _____

Instructional Practices

7. Please indicate which of the following teaching strategies and materials you used **with your struggling readers during *System 44* instructional time** this year (2011–2012). *Mark (X) only one box per row.*

	Central to my reading instruction	Small part of my reading instruction	Not part of my reading instruction
Instruction			
a. Provide time in reading block for students to practice skills on their own.	❒1	❒2	❒3
b. Provide materials for at-home practice of skills introduced in class.	❒1	❒2	❒3
c. Provide extra reading instructional time for struggling readers.	❒1	❒2	❒3
d. Include writing opportunities in reading instruction.	❒1	❒2	❒3
e. Build spelling practice into reading instruction.	❒1	❒2	❒3
f. Develop reading skills using science and social studies texts.	❒1	❒2	❒3

	Central to my reading instruction	Small part of my reading instruction	Not part of my reading instruction
Grouping			
g. Teach whole class reading lessons.	❒1	❒2	❒3
h. Work one-to-one with students on reading.	❒1	❒2	❒3
i. Work with small groups of students.	❒1	❒2	❒3
j. Group students based on skill levels.	❒1	❒2	❒3
k. Group students based on need for additional instruction in specific, targeted skills.	❒1	❒2	❒3
l. Group students based on mixed abilities (pairs or cooperative groups).	❒1	❒2	❒3
Reading Materials			
m. Use core reading series.	❒1	❒2	❒3
n. Use supplementary reading materials.	❒1	❒2	❒3
o. Use trade books.	❒1	❒2	❒3
p. Use books that are easy to decode.	❒1	❒2	❒3
q. Use separate intervention materials for some students.	❒1	❒2	❒3
r. Use reading software/technology.	❒1	❒2	❒3
s. Use teacher-made materials.	❒1	❒2	❒3
Assessments			
t. Use test results to organize instructional groups.	❒1	❒2	❒3
u. Use informal reading inventories.	❒1	❒2	❒3
v. Conduct miscue analysis, analyzing errors students make while reading aloud.	❒1	❒2	❒3
w. Use tests to determine progress on skills.	❒1	❒2	❒3
x. Use diagnostic tests to identify students who need reading intervention services.	❒1	❒2	❒3

8. Please indicate which of the following reading instructional activities you used **with your struggling readers during *System 44* instructional time** this year (2011–2012). *Mark (X) only one box per row.*

	Central to my reading instruction	Small part of my reading instruction	Not part of my reading instruction
Reading Text			
a. Students reread familiar text.	❒1	❒2	❒3
b. Students confirm or revise predictions after reading.	❒1	❒2	❒3
c. Students generate their own questions about text material.	❒1	❒2	❒3
d. Students identify their comprehension break-downs and use fix-up strategies with a partner.	❒1	❒2	❒3
e. Students orally summarize main events in stories and informational texts.	❒1	❒2	❒3
f. Students use graphic and semantic organizers to track information.	❒1	❒2	❒3
Work With Sounds and Words			
g. I teach specific strategies for decoding unfamiliar words.	❒1	❒2	❒3
h. I teach decoding/phonics skills while reading stories.	❒1	❒2	❒3
i. Students practice reading high frequency words for automaticity.	❒1	❒2	❒3
j. Students use knowledge of root words, prefixes, and suffixes to decode new words.	❒1	❒2	❒3
k. Students work with prefixes and suffixes to change the meaning of words.	❒1	❒2	❒3
l. Students use context clues to identify unknown words.	❒1	❒2	❒3
m. I discuss new and unusual words before reading.	❒1	❒2	❒3
Other Techniques			
n. Students answer questions in writing after reading stories.	❒1	❒2	❒3
o. Students select books from the library for independent reading.	❒1	❒2	❒3
p. Students are given time to read on their own for enjoyment.	❒1	❒2	❒3

9. Please rate the extent to which you agree or disagree with the following statements. *Mark (X) only one box per row.*

My *System 44* students this year received enough instruction and practice in the following areas to make sufficient gains in reading.	**Strongly disagree**				**Strongly agree**
a. phonemic awareness	❒1	❒2	❒3	❒4	❒5
b. phonics	❒1	❒2	❒3	❒4	❒5
c. fluency	❒1	❒2	❒3	❒4	❒5
d. vocabulary	❒1	❒2	❒3	❒4	❒5
e. comprehension	❒1	❒2	❒3	❒4	❒5

Other Reading Interventions

10. This school year (2011–2012) did you teach struggling readers who were eligible for *System 44* but did **not** receive *System 44* instruction (i.e., students who were in the study's control group)*?*

❒1 Yes (continue with Question 11)

❒2 No (skip to Question 13)

11. What reading instructional program(s) did you use this year with struggling readers who were eligible for *System 44* but did not receive *System 44* instruction (i.e., students who were in the study's control group)? *Mark (X) all that apply.*

❒a Houghton-Mifflin
❒b Morphographs
❒c Ticket to Read
❒d Read Naturally
❒e SRA Decoding
❒f Voyager
❒g REACH
❒h Explode the Code
❒i Rosetta Stone
❒j Language!
❒k Read 180
❒l *System 44*
❒m Other _____
❒n Other _____

12. What types of assistance were provided to struggling readers in your classroom who were part of the study's control group this year? *Mark (X) all that apply.*

❒a Pull-out resource room instruction (for special education students)

❒b In-class instructional aide (for special education students)

❒c Pull-out Title I instruction

❒d In-class instructional aide (for Title I students)

❒e After school tutoring

❒f Other (please describe): _____

System 44 Concepts

The following questions are intended to capture your current understanding of the System 44 program based on either experience with the program or what you learned in the training. This information will help us to understand areas that the training did or did not address, and will help guide future training sessions.

13. Which of the following is NOT a skill that is measured by the Scholastic Phonics Inventory? *Mark (X) only one box.*

- ❒$_1$ Identify sight words
- ❒$_2$ Recognize letter names
- ❒$_3$ Identify nonsense words
- ❒$_4$ Improve phonological awareness

14. Which of the following *System 44* program components is designed to provide students with written practice in applying the skills they are learning in the software? *Mark (X) all that apply.*

- ❒$_a$ Decodable Digest
- ❒$_b$ 44Book
- ❒$_c$ Flip chart
- ❒$_d$ SAM Practice Pages

15. Which of the following *System 44* program components is designed to provide reading fluency practice for students? *Mark (X) all that apply.*

- ❒$_a$ Decodable Digest
- ❒$_b$ *System 44* Library Books
- ❒$_c$ *System 44* Audiobooks
- ❒$_d$ Success Strand

16. Scholastic Reading Counts! is . . . *Mark (X) only one box*.

- ❒$_1$ the *System 44* adaptive software that continuously collects data on student performance.
- ❒$_2$ a set of quizzes that measure comprehension of each *System 44* paperback book.
- ❒$_3$ a set of progress monitoring tools given at the end of each *System 44* series.
- ❒$_4$ a set of motivational videos that students can play when they have successfully completed a *System 44* series of lessons.

17. Which of the following is NOT a feature of *System 44*? *Mark (X) only one box.*

- ❒1 Using SAM reports for instructional grouping
- ❒2 Teacher-led instruction in small groups
- ❒3 Library books that reinforce specific phonics skills
- ❒4 Successful completion of every software lesson

18. Phonemic awareness is . . . *Mark (X) all that apply.*

- ❒a the foundation for phonics instruction.
- ❒b the ability to hear and manipulate individual sounds in spoken words.
- ❒c the same as phonological awareness.
- ❒d the recognition that sentences consist of separate words.

19. The Scholastic Achievement Manager (SAM) can . . . *Mark (X) all that apply.*

- ❒a help teachers form instructional groups for students who need work on the same skills.
- ❒b provide detailed, diagnostic information about student strengths and weaknesses.
- ❒c allow the teacher to monitor students' ongoing progress on the software.
- ❒d provide downloadable assessments for various reading skills.

20. Select the description from the right column that matches each of the four *System 44* Zones listed on the left and enter the matched number in the box:

a. Fluency Zone	☐	1	Explicit instruction in the 44 sounds of the English language and the letters that make each sound
b. Spelling Zone	☐	2	Reading of decodable text with a focus on comprehension
c. Word Zone	☐	3	Instruction and practice in specific spelling rules
d. Smart Zone	☐	4	Modeling and practice in blending sounds

21. Select the description from the right column that matches each of the four *System 44* strands of instruction listed on the left and enter the matched number in the box:

a. Success	☐	1	Builds automatic recognition of high frequency words
b. Word Strategies	☐	2	Read passages to build on skills and improve comprehension
c. The Code	☐	3	Practice in syllable strategies and word analysis
d. Sight Words	☐	4	Direct instruction and practice in letter-sound correspondences

22. Please rate the extent to which you agree or disagree with the following statements regarding the *System 44* program*. Mark (X) only one box per row.*

I understand . . .	**Strongly disagree**				**Strongly agree**
a. how the *System 44* software works to individualize instruction and practice for students.	❒1	❒2	❒3	❒4	❒5
b. what to do during small group instruction.	❒1	❒2	❒3	❒4	❒5
c. how to use SAM to group students for small group instruction.	❒1	❒2	❒3	❒4	❒5
d. when to use the Decodable Digest, 44Book, and *System 44* library books for student practice.	❒1	❒2	❒3	❒4	❒5
e. how to monitor student progress in *System 44.*	❒1	❒2	❒3	❒4	❒5

23. Some comments I have about *System 44* are . . .

Teacher Survey

Saginaw Public Schools

May 2012

About This Survey

This survey contains questions about your background and questions about your reading instruction this school year. Your responses are important in helping us learn more about reading instruction in your district.

Please write your answers directly on the survey by checking the appropriate boxes or by writing your response in the space provided. Your individual responses will be kept confidential and will not be shared with your principal or other school or district personnel. Summary data from this survey will be shared with Scholastic staff as part of a *System 44* study that is taking place in your district.

We expect it will take approximately 15 minutes to complete the survey. Please return the survey and accompanying consent form to us in the self-addressed stamped envelope we provided. Upon receipt of this survey, we will email you a $25 gift certificate to the Scholastic Teacher Store.

Thank you very much for your help.

Prepared by:
RMC Research Corporation
111 SW Columbia Street
Suite 1200
Portland, OR 97201

Teacher Background

1. Are you female or male?

   ❒$_1$ Female

   ❒$_2$ Male

2. How many years have you worked as a full-time teacher in public schools*? Write in the number of years below. Count part of a year as one year.*

	Number of years
a. Total number of years as a teacher (do not include student teaching)	_____
b. Total number of years as a teacher in Saginaw Public Schools	_____
c. Total number of years as a teacher at your current school	_____

3. What is the *highest* degree you have obtained as of September 2011? *Mark (X) only one box.*

   ❒$_1$ Bachelor's (B.A., B.S., B.E., etc.)

   ❒$_2$ Master's degree (M.A., M.A.T., M.B.A., M.Ed., M.S., etc.)

   ❒$_3$ Education specialist or certification at least one year beyond master's level

   ❒$_4$ Doctorate or professional degree (Ph.D., Ed.D., M.D., L.L.B., J.D., D.D.S.)

   ❒$_5$ Other (please specify: _____)

4. Which of the following describes the teaching certificate(s) you currently hold in Michigan? *Mark (X) all that apply.*

   ❒$_a$ Temporary Teacher Employment Authorization

   ❒$_b$ Interim Teaching Certificate

   ❒$_c$ Provisional Certificate

   ❒$_d$ Professional Education Certificate

5. I have used *System 44* in my classroom.

   ❒$_1$ Yes ❒$_2$ No

6. I have used *Read 180* in my classroom.

   ❒$_1$ Yes ❒$_2$ No

Professional Development

7. Have you had training or support in *System 44* (e.g., in-classroom coaching, group training) provided by a Scholastic representative or other experienced *System 44* user? *Mark (X) all that apply.*

- ❒a Have not received any training in *System 44*
- ❒b Attended a *System 44* training
- ❒c Received other support for *System 44* from a Scholastic representative
- ❒d Received other support from another experienced *System 44* user
- ❒e Other (please specify: _____)

Instructional Practices

8. Please indicate which of the following teaching strategies and materials you used **with your struggling readers** this year (2011–2012)*. Mark (X) only one box per row.*

	Central to my reading instruction	Small part of my reading instruction	Not part of my reading instruction
Instruction			
a. Provide time in reading block for students to practice skills on their own.	❒1	❒2	❒3
b. Provide materials for at-home practice of skills introduced in class.	❒1	❒2	❒3
c. Provide extra reading instructional time for struggling readers.	❒1	❒2	❒3
d. Include writing opportunities in reading instruction.	❒1	❒2	❒3
e. Build spelling practice into reading instruction.	❒1	❒2	❒3
f. Develop reading skills using science and social studies texts.	❒1	❒2	❒3
Grouping			
g. Teach whole class reading lessons.	❒1	❒2	❒3
h. Work one-to-one with students on reading.	❒1	❒2	❒3
i. Work with small groups of students.	❒1	❒2	❒3
j. Group students based on skill levels.	❒1	❒2	❒3
k. Group students based on need for additional instruction in specific, targeted skills.	❒1	❒2	❒3
l. Group students based on mixed abilities (pairs or cooperative groups).	❒1	❒2	❒3

	Central to my reading instruction	Small part of my reading instruction	Not part of my reading instruction
Reading Materials			
m. Use core reading series.	❒1	❒2	❒3
n. Use supplementary reading materials.	❒1	❒2	❒3
o. Use trade books.	❒1	❒2	❒3
p. Use books that are easy to decode.	❒1	❒2	❒3
q. Use separate intervention materials for some students.	❒1	❒2	❒3
r. Use reading software/technology.	❒1	❒2	❒3
s. Use teacher-made materials.	❒1	❒2	❒3
Assessments			
t. Use test results to organize instructional groups.	❒1	❒2	❒3
u. Use informal reading inventories.	❒1	❒2	❒3
v. Conduct miscue analysis, analyzing errors students make while reading aloud.	❒1	❒2	❒3
w. Use tests to determine progress on skills.	❒1	❒2	❒3
x. Use diagnostic tests to identify students who need reading intervention services.	❒1	❒2	❒3

9. Please indicate which of the following reading instructional activities you used **with your struggling readers** this year (2011–2012). *Mark (X) only one box per row.*

	Central to my reading instruction	Small part of my reading instruction	Not part of my reading instruction
Reading Text			
a. Students reread familiar text.	❒1	❒2	❒3
b. Students confirm or revise predictions after reading.	❒1	❒2	❒3
c. Students generate their own questions about text material.	❒1	❒2	❒3
d. Students identify their comprehension break-downs and use fix-up strategies with a partner.	❒1	❒2	❒3
e. Students orally summarize main events in stories and informational texts.	❒1	❒2	❒3
f. Students use graphic and semantic organizers to track information.	❒1	❒2	❒3
Work With Sounds and Words			
g. I teach specific strategies for decoding unfamiliar words.	❒1	❒2	❒3
h. I teach decoding/phonics skills while reading stories.	❒1	❒2	❒3
i. Students practice reading high frequency words for automaticity.	❒1	❒2	❒3
j. Students use knowledge of root words, prefixes, and suffixes to decode new words.	❒1	❒2	❒3
k. Students work with prefixes and suffixes to change the meaning of words.	❒1	❒2	❒3
l. Students use context clues to identify unknown words.	❒1	❒2	❒3
m. I discuss new and unusual words before reading.	❒1	❒2	❒3
Other Techniques			
n. Students answer questions in writing after reading stories.	❒1	❒2	❒3
o. Students select books from the library for independent reading.	❒1	❒2	❒3
p. Students are given time to read on their own for enjoyment.	❒1	❒2	❒3

10. What reading instructional program(s) did you use this year with your struggling readers? *Mark (X) all that apply.*

❒a	Houghton-Mifflin	❒h	Explode the Code
❒b	Morphographs	❒i	Rosetta Stone
❒c	Ticket to Read	❒j	Language!
❒d	Read Naturally	❒k	Read 180
❒e	SRA Decoding	❒l	System 44
❒f	Voyager	❒m	Other _____
❒g	REACH	❒n	Other _____

11. What types of assistance were provided to students in your classroom this year who are struggling with reading? *Mark (X) all that apply.*

❒a Pull-out resource room instruction (for special education students)

❒b In-class instructional aide (for special education students)

❒c Pull-out Title I instruction

❒d In-class instructional aide (for Title I students)

❒e After school tutoring

❒f Other (please describe): _____

12. Please rate the extent to which you agree or disagree with the following statements*. Mark (X) only one box per row.*

My struggling students this year have received enough instruction and practice in the following areas to make sufficient gains in reading.	**Strongly disagree**				**Strongly agree**
a. phonemic awareness	❒1	❒2	❒3	❒4	❒5
b. phonics	❒1	❒2	❒3	❒4	❒5
c. fluency	❒1	❒2	❒3	❒4	❒5
d. vocabulary	❒1	❒2	❒3	❒4	❒5
e. comprehension	❒1	❒2	❒3	❒4	❒5

Thank you!

System 44
Saginaw Public School District
Classroom Visit

❒1 Coulter	❒6 Kempton	❒11 Rouse	❒15 Ruben Daniels Middle
❒2 Heavenrich	❒7 Longfellow	❒12 Stone	❒16 Thompson Middle
❒3 Herig	❒8 Loomis	❒13 Arthur Eddy K-8	
❒4 Houghton	❒9 Merrill Park	❒14 Zilwaukee K-8	
❒5 Jerome	❒10 Miller		

Prepared by:
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	Fall 2011	Winter 2012	Spring 2012
Date: _____ **Class Visit #:**	1	2	3

Number of Students in Class During Visit: _____ **Teacher Name:** _____

Observer: _____ **System 44 start time:** _____ **System 44 end time:** _____ **Total minutes:** _____

Grade Levels Represented: ❒1 4th ❒2 5th ❒3 6th ❒4 7th ❒5 8th

Class Type: ❒1 Pullout Class ❒2 Replacement ELA Class (*Mark all that apply.)*

Number of Computers Available for System 44: _____ **Number of Other Adults in Class:** ___

Role/Activity of Other Adult(s): _____

Teaching or organizational strategies used:

Notes:

Interval start time: _____ **Interval end time:** _____ **Total minutes:** _____ ***System 44* Classroom Visit Protocol**

Small Group (_____ students) (# minutes: _____)	**Teacher-Led Activity** *What is the teacher doing, and how fully is the teacher implementing each activity?*		**Teacher-Led Support** *What supports is the teacher using, and how fully[2] is the teacher using them?*	
	❒a Teaching Guide[1]		❒b Decodable Digest	⓪①②
	• Introducing	⓪①②	❒c 44 Book	⓪①②
	• Teaching/modeling	⓪①②	❒d Teaching Resources for the System 44 Library	⓪①②
	• Engaging students in guided practice	⓪①②	❒e Letter manipulatives	⓪①②
	• Apply and reinforcing/reviewing	⓪①②	❒f Flip chart	⓪①②
	Notes. [1] The "I Do, We Do, You Do" components should be incorporated for full implementation. [2] Full use of supports involves modeling answers and guiding student usage of lessons; monitoring student work; and providing verbal or written feedback. If a teacher assigns an activity using a material but does not provide any guidance, monitoring, or feedback, mark 0.		❒g Sound and articulation DVD	⓪①②
			❒h SAM Resources/Worksheets	⓪①②
			❒i *System 44* paperback books	⓪①②
			❒j SAM Data: Reading Progress Report	⓪①②
			❒k SAM Data: Differentiated Instruction Grouping Report	⓪①②
	❒m Non-*System 44* materials		❒l SAM Data: Response to Intervention Report	⓪①②

3-point scale (0 = None, 1 = Partially, 2 = Fully)

System 44 computer software	*How engaged are students in their use of the software?*
System 44 computer software (_____ students)	⓪ Not at all engaged/none engaged ① Partially engaged/some engaged ② Fully engaged/all engaged

Individual/Pairs (_____ students)	**Independent (Individual/Paired) Activity** *What are individual students or pairs doing during small group instruction?* Mark all that apply.	**Independent (Individual/Paired) Student Support** *What supports are the students using, and how engaged[3] are students in their use of them?*		
	❒a Writing activity using *System 44* materials	❒a *System 44* audiobooks	# Ss _____	⓪①②
	❒b Reading activity using *System 44* materials	❒b 44 Book	# Ss _____	⓪①②
	❒c Other practice activity using *System 44* materials	❒c Decodable Digest	# Ss _____	⓪①②
	❒d Self monitoring using progress check document, reading logs, Reading Counts quizzes, etc.	❒d SAM Resources/Worksheets	# Ss _____	⓪①②
	❒e Non-*System 44* instructional activity	❒e *System 44* paperback books (without audio)	# Ss _____	⓪①②
	❒f Non-instructional activity	❒f Letter manipulatives	# Ss _____	⓪①②
		❒g Sound and articulation DVD	# Ss _____	⓪①②

[3] Student engagement: (0 = Not at all engaged/none engaged, 1 = Partially engaged/some engaged, 2 = Fully engaged/all engaged).

Interval start time: _____ **Interval end time:** _____ **Total minutes:** _____ ***System 44* Classroom Visit Protocol**

	Teacher-Led Activity *What is the teacher doing, and how fully is the teacher implementing each activity?*		**Teacher-Led Support** *What supports is the teacher using, and how fully[2] is the teacher using them?*	
Small Group (_____ students) (# minutes: _____)	❒a Teaching Guide[1]		❒b Decodable Digest	⓪①②
	• Introducing	⓪①②	❒c 44 Book	⓪①②
	• Teaching/modeling	⓪①②	❒d Teaching Resources for the System 44 Library	⓪①②
	• Engaging students in guided practice	⓪①②	❒e Letter manipulatives	⓪①②
	• Apply and reinforcing/reviewing	⓪①②	❒f Flip chart	⓪①②
	Notes. [1] The "I Do, We Do, You Do" components should be incorporated for full implementation. [2] Full use of supports involves modeling answers and guiding student usage of lessons; monitoring student work; and providing verbal or written feedback. If a teacher assigns an activity using a material but does not provide any guidance, monitoring, or feedback, mark 0.		❒g Sound and articulation DVD	⓪①②
			❒h SAM Resources/Worksheets	⓪①②
			❒i *System 44* paperback books	⓪①②
			❒j SAM Data: Reading Progress Report	⓪①②
			❒k SAM Data: Differentiated Instruction Grouping Report	⓪①②
	❒m Non-*System 44* materials		❒l SAM Data: Response to Intervention Report	⓪①②

3-point scale (0 = None, 1 = Partially, 2 = Fully)

System 44 computer software	*How engaged are students in their use of the software?*
System 44 computer software (_____ students)	⓪ Not at all engaged/none engaged ① Partially engaged/some engaged ② Fully engaged/all engaged

	Independent (Individual/Paired) Activity *What are individual students or pairs doing during small group instruction?* Mark all that apply.		**Independent (Individual/Paired) Student Support** *What supports are the students using, and how engaged[3] are students in their use of them?*		
Individual/Pairs (_____ students)	❒a Writing activity using *System 44* materials		❒a *System 44* audiobooks	# Ss _____	⓪①②
	❒b Reading activity using *System 44* materials		❒b 44 Book	# Ss _____	⓪①②
	❒c Other practice activity using *System 44* materials		❒c Decodable Digest	# Ss _____	⓪①②
	❒d Self monitoring using progress check document, reading logs, Reading Counts quizzes, etc.		❒d SAM Resources/Worksheets	# Ss _____	⓪①②
	❒e Non-*System 44* instructional activity		❒e *System 44* paperback books (without audio)	# Ss _____	⓪①②
	❒f Non-instructional activity		❒f Letter manipulatives	# Ss _____	⓪①②
			❒g Sound and articulation DVD	# Ss _____	⓪①②

[3] Student engagement: (0 = Not at all engaged/none engaged, 1 = Partially engaged/some engaged, 2 = Fully engaged/all engaged).

Interval start time: _____ **Interval end time:** _____ **Total minutes:** _____ ***System 44* Classroom Visit Protocol**

	Teacher-Led Activity *What is the teacher doing, and how fully is the teacher implementing each activity?*		**Teacher-Led Support** *What supports is the teacher using, and how fully[2] is the teacher using them?*	
Small Group (_____ students) (# minutes: _____)	❒a Teaching Guide[1]		❒b Decodable Digest	⓪①②
	• Introducing	⓪①②	❒c 44 Book	⓪①②
	• Teaching/modeling	⓪①②	❒d Teaching Resources for the System 44 Library	⓪①②
	• Engaging students in guided practice	⓪①②	❒e Letter manipulatives	⓪①②
	• Apply and reinforcing/reviewing	⓪①②	❒f Flip chart	⓪①②
	Notes. [1] The "I Do, We Do, You Do" components should be incorporated for full implementation. [2] Full use of supports involves modeling answers and guiding student usage of lessons; monitoring student work; and providing verbal or written feedback. If a teacher assigns an activity using a material but does not provide any guidance, monitoring, or feedback, mark 0.		❒g Sound and articulation DVD	⓪①②
			❒h SAM Resources/Worksheets	⓪①②
			❒i *System 44* paperback books	⓪①②
			❒j SAM Data: Reading Progress Report	⓪①②
			❒k SAM Data: Differentiated Instruction Grouping Report	⓪①②
	❒m Non-*System 44* materials		❒l SAM Data: Response to Intervention Report	⓪①②

3-point scale (0 = None, 1 = Partially, 2 = Fully)

System 44 computer software	*How engaged are students in their use of the software?*
System 44 computer software (_____ students)	⓪ Not at all engaged/none engaged ① Partially engaged/some engaged ② Fully engaged/all engaged

	Independent (Individual/Paired) Activity *What are individual students or pairs doing during small group instruction?* Mark all that apply.	**Independent (Individual/Paired) Student Support** *What supports are the students using, and how engaged[3] are students in their use of them?*		
Individual/Pairs (_____ students)	❒a Writing activity using *System 44* materials	❒a *System 44* audiobooks	# Ss _____	⓪①②
	❒b Reading activity using *System 44* materials	❒b 44 Book	# Ss _____	⓪①②
	❒c Other practice activity using *System 44* materials	❒c Decodable Digest	# Ss _____	⓪①②
	❒d Self monitoring using progress check document, reading logs, Reading Counts quizzes, etc.	❒d SAM Resources/Worksheets	# Ss _____	⓪①②
	❒e Non-*System 44* instructional activity	❒e *System 44* paperback books (without audio)	# Ss _____	⓪①②
	❒f Non-instructional activity	❒f Letter manipulatives	# Ss _____	⓪①②
		❒g Sound and articulation DVD	# Ss _____	⓪①②

[3] Student engagement: (0 = Not at all engaged/none engaged, 1 = Partially engaged/some engaged, 2 = Fully engaged/all engaged).

Interval start time: _____ **Interval end time:** _____ **Total minutes:** _____ ***System 44* Classroom Visit Protocol**

	Overall *Did the teacher:*		**Notes**
OVERVIEW	**[1]** Maintain an appropriate pace?	⓪①②③	
	[2] Deliver lessons appropriate for the skill levels of the students?	⓪①②③	
	[3] Appear well prepared for the lesson?	⓪①②③	
	[4] Actively tries to engage students throughout the lesson?	⓪①②③	
	[5] Maintain a positive learning environment (e.g., limited interruption, good classroom management)?	⓪①②③	
	[6] Execute the lesson well?	⓪①②③	
	[7] Monitor students? (Check for on-task behavior, understanding; provide feedback)	⓪①②③	
	[8] Keep students on task?	⓪①②③	
	[9] Ensure smooth and efficient transitions between rotations (e.g., use of timer or clock, evidence of transition routines, rituals for students putting materials away).	⓪①②③	
	[10] Use flexible groupings for students (using SAM data, anecdotal evidence) or regroup students based on instructional needs?	⓪①②③	
	[11 Differentiate support based on students' needs (e.g., provided individualized instruction, used ELL or SPED sections of teaching guide)	⓪①②③	

4-point scale (0 = Not at all, 1 = To a small extent, 2 = To a moderate extent, 3 = Definitely)

	***System 44* Classroom Setup**		**Notes**
CLASS ROOM	Computers (for 1/3 of class) are accessible and functioning	⓪①②	
	Auxiliary equipment (headsets, microphones, CD players) are accessible and functioning	⓪①②	
	System 44 materials are easily accessible to students and teacher	⓪①②	

3-point scale (0 = None, 1= Some, 2 = All)

Interval start time: _____ **Interval end time:** _____ **Total minutes:** _____ ***System 44* Classroom Visit Protocol**

❒ Check here if no whole class activity takes place on date of observation ❒ Check here if whole class activity takes place at end of class

	Teacher-Led Activity *What is the teacher doing, and how fully is the teacher implementing each activity?*		**Teacher-Led Support** *What supports is the teacher using, and how fully[2] is the teacher using them?*	
Whole Class/Large Group (_____ students)	❒a Teaching Guide[1]		❒b Letter manipulatives	⓪①②
	• Introducing	⓪①②	❒c Flip chart	⓪①②
	• Teaching/modeling	⓪①②	❒d 44 Book	⓪①②
	• Engaging students in guided practice	⓪①②	❒e Decodable Digest	⓪①②
	• Apply and reinforcing/reviewing	⓪①②	❒f Teaching Resources for the System 44 Library	⓪①②
	Notes. [1] The "I Do, We Do, You Do" components should be incorporated for full implementation. [2] Full use of supports involves modeling answers and guiding student usage of lessons; monitoring student work; and providing verbal or written feedback. If a teacher assigns an activity using a material but does not provide any guidance, monitoring, or feedback, mark 0.		❒g *System 44* paperback books	⓪①②
			❒h SAM Resources/Worksheets	⓪①②
			❒i Sound and articulation DVD	⓪①②
			❒j SAM Data Reports (List_____)	⓪①②
			❒k Non-*System 44* materials	⓪①②

3-point scale (0 = None, 1 = Partially, 2 = Fully)

	Independent (Individual/Paired) Activity *What are individual students or pairs doing during large group instruction?* Mark all that apply.	**Independent (Individual/Paired) Student Support** *What supports are the students using, and how engaged[3] are students in their use of them?*		
Individual/Pairs (_____ students)	❒a Writing activity using *System 44* materials	❒a *System 44* audiobooks	# Ss _____	⓪①②
	❒b Reading activity using *System 44* materials	❒b 44 Book	# Ss _____	⓪①②
	❒c Other practice activity using *System 44* materials	❒c Decodable Digest	# Ss _____	⓪①②
	❒d Self monitoring using progress check document, reading logs, Reading Counts quizzes, etc.	❒d SAM Resources/Worksheets	# Ss _____	⓪①②
	❒e Non-*System 44* instructional activity	❒e *System 44* paperback books (without audio)	# Ss _____	⓪①②
	❒f Non-instructional activity	❒f Letter manipulatives	# Ss _____	⓪①②
		❒g Sound and articulation DVD	# Ss _____	⓪①②

[3] Student engagement: (0 = Not at all engaged/none engaged, 1 = Partially engaged/some engaged, 2 = Fully engaged/all engaged).

School: _____

System 44--Saginaw
Teacher Interview
Spring 2012

Thank you for taking the time to talk with me today. As part of the evaluation of the System 44 program in your district, RMC Research staff are talking with teachers who implemented the program to help us understand factors that may have contributed to or hindered the success of the program. Your responses will be kept confidential and will not be shared with your principal or other district personnel. Your answers will be combined with other teachers' information so that no one can know about any one person's responses.

Do you have any questions before we begin?

1. Had you taught System 44 before this school year?

   ❒ yes ❒ no

   If yes, how many years have you used the program? _____

2. What features of the *System 44* program do you like best?

3. What aspects of *System 44* implementation do you think you struggled with the most this year? How did you address or resolve the challenge(s)?

4. How did you decide how to group students on any given day (e.g., which students would use the computer first)?

5. How frequently did you use whole group instruction? (If once a week or more: what did you typically focus on during whole group instruction?) (If less than once a week: why did you not use whole group instruction more frequently?)

6. In what ways, if any, did you use SAM reports? Which reports did you use, and how frequently did you use them? Prompt: (Show report examples)

    a. Screening and Placement;

    b. Software Performance;

    c. Reading Progress;

    d. Response to Intervention;

    e. Differentiated Instruction Grouping;

    f. Student Mastery

7. What technology issues did you experience beyond the start-up period? Did these issues get in the way of implementing the program?

8. Did you experience any issues with scheduling students to participate in *System 44*? If so, please explain whether these issues resolved during the school year.

9. If you had the opportunity to make recommendations to teachers in another school that is planning to implement *System 44* for the first time next year, what advice would you give them?

School: _____

System 44—Saginaw
Principal Interview
Spring 2012

As part of the evaluation of the Scholastic System 44 program, we want to talk with administrators at each participating school to learn more about the context in which System 44 was implemented as well as factors that facilitated or hindered implementation of the program.

1. In what year did your school first implement the System 44 reading program?

   ❒ 2011–2012
   ❒ _____

2. In what year did your school first implement the Scholastic Read 180 reading program?

   ❒ 2011–2012
   ❒ _____

3. Have you had an opportunity to observe *System 44* classes at your school? If yes, what features of the program do you think contribute to student success?

4. What other programs or services are available to students in your school who are struggling with reading? (Prompts: in-class programs, pull-out programs, after school programs or tutoring)

5. What factors do you think have facilitated implementation of *System 44*? (Prompts: district staff support, Scholastic staff support, teacher interest, student interest, computer-delivered instruction, teacher-delivered instruction, books and other materials)

6. What factors have hindered implementation of *System 44*? (Prompts: hardware issues, software issues, problems with other materials such as books, testing to identify the right students, testing for treatment and control group students, pullout from other subjects, research requirement for random assignment, problems at Thompson and Curran)

7. What feedback have you received from teachers or parents about student outcomes resulting from participation in *System 44*?)

8. What feedback have you received from teachers about the training or support they received from Scholastic for implementing the program?

9. What plans does your school have for continuing *System 44* next year? (Prompts: Do you plan to do anything differently as far as implementation or scheduling?)

10. Do you have any suggestions for how the evaluation might have been better implemented? (e.g., identifying students, random assignment, SPI and SRI testing, individual testing of treatment and control group students).

11. Are there any other comments you would like to make?

System 44—Saginaw
District Staff Focus Group
Spring 2012

As part of the evaluation of the Scholastic System 44 program, we want to talk with district staff involved in implementing the program to learn more about the context in which System 44 was implemented as well as factors that facilitated or hindered implementation of the program.

System 44 Implementation

1. What types of professional development did *System 44* teachers receive this year?

   What did you or the *System 44* teachers find most useful about the professional development they received?

   What suggestions, if any, do you have regarding professional development?

2. What factors do you think facilitated implementation of *System 44* in the 16 study schools this year?

3. What factors do you think hindered implementation (i.e., what challenges did schools face in implementing *System 44* in their classrooms)?

4. What recommendations would you have for another district that is starting to use the *System 44* program in their schools (i.e., what were the lessons learned)?

5. Overall, what impact do you think the program has had on students? What aspects of the program do you believe have had the greatest impact on students?

Evaluation Implementation

6. What questions would you be interested in having answered by the evaluation of System 44 in your district?

7. What recommendations would you make concerning the evaluation component of the *System 44* study (i.e., what were the lessons learned)?

8. What was the process for administering the SPI and SRI tests in Fall and Winter (i.e., who was responsible for administering them, how long did the process take)?

9. Is there anything else that you would like to add?

Appendix C
Item Results for Instructional Practices

Exhibit C1
Percentage of Teachers Using Various Strategies With Struggling Readers

Instructional Strategy	*System 44* Last Year (2010–2011)			*System 44* This Year (2011–2012)			Control Teachers This Year (2011–2012)		
	Not Part	Small Part	Central	Not Part	Small Part	Central	Not Part	Small Part	Central
Instruction	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Provide time in reading block for students to practice skills on their own.	0	59	41	0	15	85	0	38	62
2. Provide materials for at-home practice of skills introduced in class.	18	65	18	68	21	11	18	50	32
3. Provide extra reading instructional time for struggling readers.	0	24	76	10	30	60	3	31	66
4. Include writing opportunities in reading instruction.	0	47	53	10	50	40	0	28	72
5. Build spelling practice into reading instruction.	12	53	35	15	50	35	14	41	45
6. Develop reading skills using science and social studies texts.	18	47	35	65	10	25	3	34	62
Grouping									
7. Teach whole-class reading lessons.	24	35	41	0	25	75	7	29	64
8. Work one-to-one with students on reading.	0	41	59	0	25	75	4	68	29
9. Work with small groups of students.	0	18	82	0	15	85	0	41	59
10. Group students based on skill levels.	12	29	59	0	15	85	11	43	46
11. Group students based on need for additional instruction in specific, targeted skills.	6	29	65	5	25	70	0	55	45
12. Group students based on mixed abilities (pairs or cooperative groups).	24	41	35	15	30	55	0	48	52
Reading Materials									
13. Use core reading series.	0	41	59	20	5	75	10	45	45
14. Use supplementary reading materials.	0	18	82	30	20	50	0	28	72
15. Use trade books.	24	53	24	55	20	25	7	46	46
16. Use books that are easy to decode.	6	35	59	25	30	45	11	57	32
17. Use separate intervention materials for some students.	0	24	76	45	20	35	3	41	55
18. Use reading software/technology.	35	35	29	15	15	70	14	41	45
19. Use teacher-made materials.	6	59	35	55	30	15	7	52	41
Assessments									
20. Use test results to organize instructional groups.	12	35	53	11	21	68	3	17	79
21. Use informal reading inventories.	12	41	47	47	26	26	14	45	41
22. Conduct miscue analysis, analyzing errors students make while reading aloud.	6	29	65	11	42	47	3	45	52
23. Use tests to determine progress on skills.	0	24	76	0	47	53	0	48	52
24. Use diagnostic tests to identify students who need reading intervention services.	6	12	82	6	50	44	3	28	69

Exhibit C2
Percentage of Teachers Using Various Activities With Struggling Readers

Instructional Activity	*System 44* Last Year (2010–2011)			*System 44* This Year (2011–2012)			Control Teachers This Year (2011–2012)		
	Not Part	Small Part	Central	Not Part	Small Part	Central	Not Part	Small Part	Central
Reading Text	10.	11.	12.	13.	14.	15.	16.	17.	18.
25. Students reread familiar text.	0	24	76	0	20	80	3	28	69
26. Students confirm or revise predictions after reading.	0	35	65	5	45	50	3	41	55
27. Students generate their own questions about text material.	18	53	29	20	40	40	7	45	48
28. Students identify their comprehension breakdowns and use fix-up strategies with a partner.	29	47	24	35	45	20	31	31	38
29. Students orally summarize main events in stories and informational texts.	0	29	71	5	30	65	7	34	59
30. Students use graphic and semantic organizers to track information.	12	35	53	20	40	40	3	31	66
Work With Sounds and Words									
31. I teach specific strategies for decoding unfamiliar words.	6	29	65	0	10	90	10	52	38
32. I teach decoding/phonics skills while reading stories.	6	24	71	0	5	95	17	41	41
33. Students practice reading high frequency words for automaticity.	6	24	71	0	25	75	17	48	34
34. Students use knowledge of root words, prefixes, and suffixes to decode new words.	0	41	59	0	15	85	0	45	55
35. Students work with prefixes and suffixes to change the meaning of words.	0	53	47	0	35	65	3	62	34
36. Students use context clues to identify unknown words.	0	18	82	0	20	80	0	31	69
37. I discuss new and unusual words before reading.	6	29	65	0	16	84	0	34	66
Other Techniques									
38. Students answer questions in writing after reading stories.	12	35	53	10	40	50	0	24	76
39. Students select books from the library for independent reading.	0	24	76	11	21	68	3	21	76
40. Students are given time to read on their own for enjoyment.	0	35	65	15	15	70	3	17	79

Appendix D
Fixed and Random Effects and Intraclass Correlations

Exhibit D1
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring TOSREC Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	18.29	0.89	15	20.64	.000
Student	*System 44*	0.05	1.13	308	0.05	.965
	Fall TOSREC Score	0.64	0.05	308	12.97	.000
	Learning disabled	-3.09	1.29	308	-2.40	.017
	African American	0.08	1.62	308	0.05	.960
	English language learner	-3.05	2.97	308	-1.03	.305
	Elementary school level	3.46	1.64	308	2.11	.035

Random Effects

Level	Variance Components	Variance
School	Level 2	5.11
Student	Level 1	98.80

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	6.86	.037
Student	Level 1	178.77	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Exhibit D2
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring CTOPP Elision Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	18.76	0.36	15	51.84	.000
Student	*System 44*	1.45	0.45	310	3.25	.002
	Fall CTOPP Elision Score	0.69	0.04	310	16.32	.000
	Learning disabled	-0.87	0.47	310	-1.86	.064
	African American	-1.47	0.64	310	-2.28	.023
	English language learner	-2.77	1.18	310	-2.34	.020
	Elementary school level	-1.54	0.65	310	-2.36	.019

Random Effects

Level	Variance Components	Variance
School	Level 2	0.90
Student	Level 1	15.60

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	1.80	.053
Student	Level 1	32.10	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Exhibit D3
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring TOWRE Sight Word Efficiency Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	57.85	0.40	15	145.16	.000
Student	*System 44*	2.03	0.69	309	2.93	.004
	Fall TOWRE Sight Word Efficiency Score	0.85	0.03	309	30.37	.000
	Learning disabled	-1.91	0.78	309	-2.44	.015
	African American	0.13	0.94	309	0.14	.893
	English language learner	-1.00	1.80	309	-0.56	.579
	Elementary school level	1.56	0.83	309	1.89	.060

Random Effects

Level	Variance Components	Variance
School	Level 2	0.38
Student	Level 1	37.50

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	10.35	.052
Student	Level 1	186.99	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Exhibit D4
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring TOWRE Phonetic Decoding Efficiency Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	23.98	0.82	15	29.27	.000
Student	*System 44*	1.27	0.68	308	1.85	.065
	Fall TOWRE Phonetic Decoding Efficiency Score	0.85	0.03	308	26.14	.000
	Learning disabled	-2.08	0.74	308	-2.80	.006
	African American	-0.15	1.01	308	-0.15	.881
	English language learner	-0.51	1.82	308	-0.28	.780
	Elementary school level	-2.08	0.74	308	-2.80	.006

Random Effects

Level	Variance Components	Variance
School	Level 2	7.10
Student	Level 1	36.05

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	7.42	.053
Student	Level 1	132.84	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Exhibit D5
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring SRI Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	404.78	18.23	15	22.20	.000
Student	*System 44*	80.82	18.73	280	4.31	.000
	Fall SRI Score	0.69	0.04	280	16.44	.000
	Learning disabled	-57.20	20.69	280	-2.77	.007
	African American	-32.45	26.53	280	-1.22	.223
	English language learner	-58.14	48.58	280	-1.20	.233
	Elementary school level	-58.40	32.04	280	-1.82	.069

Random Effects

Level	Variance Components	Variance
School	Level 2	2,829.18
Student	Level 1	24,318.87

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	8,930.27	.125
Student	Level 1	62,548.08	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Exhibit D6
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring SPI Letter Name Accuracy Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	10.74	0.03	15	357.05	.000
Student	*System 44*	0.03	0.06	272	0.45	.653
	Fall SPI Letter Name Accuracy Score	0.10	0.03	272	3.09	.003
	Learning disabled	-0.01	0.06	272	-0.15	.879
	African American	-0.04	0.08	272	-0.56	.575
	English language learner	0.09	0.17	272	0.57	.571
	Elementary school level	-0.06	0.06	272	-0.92	.357

Random Effects

Level	Variance Components	Variance
School	Level 2	0.00
Student	Level 1	0.25

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	0.00	.000
Student	Level 1	0.26	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Exhibit D7
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring SPI Sight Word Accuracy Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	22.51	0.31	15	71.58	.000
Student	*System 44*	-0.25	0.39	272	-0.64	.525
	Fall SPI Sight Word Accuracy Score	0.76	0.05	272	15.50	.000
	Learning disabled	-0.92	0.45	272	-2.07	.039
	African American	0.86	0.54	272	1.58	.115
	English language learner	-1.19	1.05	272	-1.13	.258
	Elementary school level	-0.24	0.58	272	-0.42	.677

Random Effects

Level	Variance Components	Variance
School	Level 2	0.73
Student	Level 1	10.13

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	3.48	.128
Student	Level 1	23.68	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Exhibit D8
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring SPI Sight Word Fluency Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	8.59	0.37	15	23.43	.000
Student	*System 44*	0.85	0.46	272	1.85	.065
	Fall SPI Sight Word Fluency Score	0.71	0.07	272	10.34	.000
	Learning disabled	-2.18	0.50	272	-4.36	.000
	African American	1.12	0.64	272	1.73	.084
	English language learner	2.27	1.25	272	1.82	.070
	Elementary school level	-0.59	0.68	272	-0.86	.391

Random Effects

Level	Variance Components	Variance
School	Level 2	0.96
Student	Level 1	14.37

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	0.69	.027
Student	Level 1	24.67	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Exhibit D9
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring SPI Nonsense Word Accuracy Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	20.27	0.23	15	86.35	.000
Student	*System 44*	1.61	0.43	272	3.74	.000
	Fall SPI Nonsense Word Accuracy Score	0.63	0.05	272	11.92	.000
	Learning disabled	-1.36	0.46	272	-2.98	.004
	African American	-1.68	0.58	272	-2.92	.004
	English language learner	-1.01	1.16	272	-0.87	.387
	Elementary school level	-1.14	0.48	272	-2.37	.018

Random Effects

Level	Variance Components	Variance
School	Level 2	0.09
Student	Level 1	12.84

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	2.20	.089
Student	Level 1	22.49	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Exhibit D10
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring SPI Nonsense Word Fluency Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	6.81	0.47	15	14.45	.000
Student	*System 44*	0.42	0.47	272	0.90	.372
	Fall SPI Nonsense Word Fluency Score	0.55	0.08	272	6.99	.000
	Learning disabled	-1.72	0.49	272	-3.52	.001
	African American	-0.77	0.68	272	-1.15	.253
	English language learner	2.44	1.30	272	1.88	.060
	Elementary school level	-1.73	0.77	272	-2.26	.025

Random Effects

Level	Variance Components	Variance
School	Level 2	2.12
Student	Level 1	15.04

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	1.02	.049
Student	Level 1	19.79	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Exhibit D11
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring SPI Overall Accuracy Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	42.74	0.51	15	83.77	.000
Student	*System 44*	1.43	0.67	272	2.12	.035
	Fall SPI Overall Accuracy Score	0.79	0.05	272	15.56	.000
	Learning disabled	-1.63	0.78	272	-2.09	.037
	African American	-0.69	0.94	272	-0.73	.465
	English language learner	-1.86	1.83	272	-1.02	.310
	Elementary school level	-0.80	0.97	272	-0.82	.412

Random Effects

Level	Variance Components	Variance
School	Level 2	1.70
Student	Level 1	30.97

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	11.27	.138
Student	Level 1	70.36	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Exhibit D12
Final Model for Estimating Fixed and Random Effects of *System 44* on Spring SPI Overall Fluency Scores

Fixed Effects

Level	Effect	Impact (β)	*SE*	*DF*	*t*	*p*
School	Intercept	15.54	0.79	15	19.57	.000
Student	*System 44*	1.35	0.80	272	1.69	.091
	Fall SPI Overall Fluency Score	0.76	0.08	272	9.84	.000
	Learning disabled	-3.60	0.86	272	-4.19	.000
	African American	0.52	1.14	272	0.46	.649
	English language learner	5.20	2.18	272	2.39	.018
	Elementary school level	-2.26	1.31	272	-1.72	.085

Random Effects

Level	Variance Components	Variance
School	Level 2	6.01
Student	Level 1	42.78

Random Effects (From Unconditional Model)[a]

Level	Variance Components	Variance	ICC
School	Level 2	2.55	.035
Student	Level 1	70.34	

[a]The unconditional model is a 2-level model with students (Level 1) nested in schools (Level 2), and only an intercept term on the right-hand side of the model.

Appendix E
Mean Scores on Reading Tests, SRI, and SPI Overall Accuracy and Fluency Outcomes

Exhibit E1
TOSREC Means by Subgroup

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Grade								
4	31	12.02	12.85	0.83	28	13.09	15.07	1.98
5	54	13.94	19.47	5.53	59	15.11	22.98	7.87
6	33	22.34	20.49	-1.85	35	23.23	19.45	-3.77
7	19	12.79	22.35	9.56	17	17.26	23.81	6.55
8	18	10.83	13.04	2.21	23	9.84	8.01	-1.83
Decoding Status[a]								
Pre decoder	2	14.10	13.65	-0.45	5	15.42	17.10	1.68
Beginning decoder	71	12.11	15.02	2.91	63	9.29	12.66	3.38
Developing decoder	82	17.23	20.61	3.38	94	20.51	23.02	2.51
FRL Status								
None	7	13.27	15.61	2.34	6	26.35	28.20	1.85
Free or Reduced-Price	148	14.94	18.05	3.11	156	15.59	18.45	2.86
ELL Status								
English only	149	14.89	18.19	3.30	153	15.86	18.91	3.05
English learner	6	14.15	11.67	-2.48	9	18.19	17.08	-1.11
SPED Status								
None	71	22.28	24.25	1.97	81	20.80	23.93	3.13
Learning disability	84	8.51	12.55	4.03	81	11.18	13.69	2.51
Ethnicity								
Caucasian	16	19.87	21.80	1.93	17	18.48	19.59	1.11
African American	124	13.71	17.36	3.65	124	15.11	18.46	3.35
Hispanic	15	18.97	18.87	-0.10	21	19.16	20.22	1.07
School								
Coulter	5	8.78	7.00	-1.78	5	16.26	19.10	2.84
Heavenrich	4	11.60	11.65	0.05	6	19.53	15.95	-3.58
Herig	12	22.76	23.60	0.84	15	18.63	20.57	1.93
Houghton	5	8.94	15.94	7.00	7	5.83	17.31	11.49
Jerome	7	7.18	10.04	2.86	6	16.02	16.55	0.53
Kempton	5	9.34	21.32	11.98	7	16.03	27.04	11.01
Longfellow	5	8.28	13.22	4.94	6	15.47	25.75	10.28
Loomis	18	17.07	22.94	5.87	18	21.11	24.65	3.54
Merrill Park	6	9.98	13.07	3.08	3	9.43	5.80	-3.63

exhibit continues

Exhibit E1 (continued)

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Miller	4	16.93	27.00	10.08	3	15.67	24.30	8.63
Rouse	8	16.63	12.88	-3.75	7	11.80	16.07	4.27
Stone	4	3.35	18.88	15.53	3	1.00	11.77	10.77
Arthur Eddy	11	18.04	20.20	2.16	9	12.13	17.51	5.38
Zilwaukee	3	21.47	18.07	-3.40	8	21.36	27.24	5.88
Ruben Daniels	37	15.38	19.19	3.81	37	12.87	15.20	2.34
Thompson	21	16.00	15.54	-0.46	22	21.52	16.52	-5.00

Exhibit E2
CTOPP Elision Means by Subgroup

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Grade								
4	31	15.71	16.32	0.61	28	16.82	16.46	-0.36
5	54	19.15	19.59	0.44	59	19.54	18.32	-1.22
6	33	19.79	21.58	1.79	35	19.74	19.89	0.14
7	19	15.58	18.11	2.53	17	17.71	18.24	0.53
8	18	18.56	21.11	2.56	23	18.65	19.30	0.65
Decoding Status[a]								
Pre decoder	2	12.00	14.50	2.50	5	16.20	17.60	1.40
Beginning decoder	71	17.21	17.69	0.48	63	17.87	16.98	-0.89
Developing decoder	82	19.00	20.91	1.91	94	19.55	19.51	-0.04
FRL Status								
None	7	16.71	19.14	2.43	6	20.67	19.83	-0.83
Free or Reduced-Price	148	18.16	19.36	1.21	156	18.72	18.42	-0.31
ELL Status								
English only	149	18.19	19.56	1.37	153	18.84	18.51	-0.33
English learner	6	15.50	14.17	-1.33	9	18.00	17.78	-0.22
SPED Status								
None	71	19.90	21.01	1.11	81	19.35	19.41	0.06
Learning disability	84	16.56	17.95	1.39	81	18.25	17.53	-0.72
Ethnicity								
Caucasian	16	21.19	22.69	1.50	17	20.53	19.53	-1.00
African American	124	17.73	19.08	1.35	124	18.52	17.96	-0.56
Hispanic	15	17.80	18.07	0.27	21	19.05	20.62	1.57
School								
Coulter	5	22.80	17.20	-5.60	5	22.40	14.60	-7.80
Heavenrich	4	19.25	18.25	-1.00	6	17.33	17.50	0.17
Herig	12	19.50	20.17	0.67	15	16.93	18.73	1.80
Houghton	5	17.20	18.80	1.60	7	20.43	18.14	-2.29
Jerome	7	17.14	17.71	0.57	6	17.17	15.17	-2.00
Kempton	5	18.40	18.20	-0.20	7	18.14	18.86	0.71
Longfellow	5	21.60	21.40	-0.20	6	19.33	22.33	3.00
Loomis	18	18.33	19.33	1.00	18	18.67	17.50	-1.17
Merrill Park	6	14.67	14.83	0.17	3	12.67	11.33	-1.33

exhibit continues

Exhibit E2 (continued)

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Miller	4	15.75	18.50	2.75	3	16.33	17.00	0.67
Rouse	8	15.50	17.75	2.25	7	20.00	19.29	-0.71
Stone	4	14.00	14.50	0.50	3	17.00	12.67	-4.33
Arthur Eddy	11	17.36	19.73	2.36	9	21.11	18.11	-3.00
Zilwaukee	3	22.00	22.67	0.67	8	23.88	22.38	-1.50
Ruben Daniels	37	18.65	20.70	2.05	37	18.24	19.38	1.14
Thompson	21	17.38	20.05	2.67	22	18.91	18.95	0.05

Exhibit E3
TOWRE Sight Word Efficiency Means by Subgroup

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Grade								
4	31	40.33	48.44	8.10	28	44.13	51.43	7.30
5	54	49.73	57.68	7.94	59	54.22	58.64	4.42
6	33	57.36	62.32	4.95	35	57.09	58.77	1.69
7	19	56.74	62.26	5.53	17	57.76	60.18	2.41
8	18	56.06	59.64	3.58	23	56.91	61.70	4.78
Decoding Status[a]								
Pre decoder	2	40.00	44.50	4.50	5	45.80	54.40	8.60
Beginning decoder	71	42.71	49.96	7.26	63	44.75	49.56	4.81
Developing decoder	82	58.61	64.54	5.93	94	60.37	63.87	3.50
FRL Status								
None	7	45.50	52.64	7.14	6	61.83	62.17	0.33
Free or Reduced-Price	148	51.41	57.84	6.43	156	53.54	57.86	4.31
ELL Status								
English only	149	51.32	57.79	6.46	153	53.73	58.00	4.27
English learner	6	46.67	53.17	6.50	9	55.94	58.28	2.33
SPED Status								
None	71	58.13	64.41	6.28	81	59.73	64.23	4.50
Learning disability	84	45.16	51.86	6.69	81	47.96	51.80	3.83
Ethnicity								
Caucasian	16	51.50	58.28	6.78	17	50.03	54.74	4.71
African American	124	51.11	57.54	6.42	124	54.10	58.33	4.23
Hispanic	15	50.97	57.47	6.50	21	55.48	58.83	3.36
School								
Coulter	5	42.10	45.10	3.00	5	56.60	62.10	5.50
Heavenrich	4	48.13	53.25	5.13	6	49.58	53.67	4.08
Herig	12	54.71	61.88	7.17	15	53.37	60.70	7.33
Houghton	5	39.90	47.30	7.40	7	54.00	56.43	2.43
Jerome	7	41.07	47.21	6.14	6	48.25	55.33	7.08
Kempton	5	49.40	56.90	7.50	7	55.21	60.43	5.21
Longfellow	5	41.20	52.50	11.30	6	55.08	61.00	5.92
Loomis	18	53.78	62.11	8.33	18	54.06	56.61	2.56
Merrill Park	6	39.25	56.17	16.92	3	30.67	34.67	4.00

exhibit continues

Exhibit E3 (continued)

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Miller	4	52.25	59.00	6.75	3	61.00	66.33	5.33
Rouse	8	42.69	48.88	6.19	7	43.43	49.86	6.43
Stone	4	48.50	53.38	4.88	3	39.83	36.83	-3.00
Arthur Eddy	11	53.41	58.86	5.45	9	55.11	60.22	5.11
Zilwaukee	3	49.50	58.83	9.33	8	51.38	59.81	8.44
Ruben Daniels	37	55.80	61.31	5.51	37	52.59	56.69	4.09
Thompson	21	56.00	59.33	3.33	22	65.16	65.45	0.30

Exhibit E4
TOWRE Phonetic Decoding Efficiency Means by Subgroup

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Grade								
4	31	15.66	18.94	3.27	28	17.80	20.59	2.79
5	54	22.16	24.64	2.48	59	21.63	23.85	2.22
6	33	22.41	26.55	4.14	35	24.21	26.13	1.92
7	19	19.45	23.50	4.05	17	21.59	23.59	2.00
8	18	20.72	24.19	3.47	23	22.78	26.04	3.26
Decoding Status[a]								
Pre decoder	2	6.00	12.25	6.25	5	18.60	23.70	5.10
Beginning decoder	71	15.91	19.28	3.37	63	16.15	17.50	1.35
Developing decoder	82	24.66	27.77	3.10	94	25.56	28.39	2.83
FRL Status								
None	7	16.36	21.50	5.14	6	29.50	33.17	3.67
Free or Reduced-Price	148	20.60	23.81	3.21	156	21.38	23.70	2.31
ELL Status								
English only	149	20.57	23.94	3.37	153	21.50	23.84	2.34
English learner	6	16.50	17.92	1.42	9	24.78	27.61	2.83
SPED Status								
None	71	23.16	27.61	4.45	81	25.48	28.27	2.80
Learning disability	84	18.09	20.46	2.37	81	17.90	19.78	1.88
Ethnicity								
Caucasian	16	23.03	26.72	3.69	17	21.09	23.12	2.03
African American	124	20.21	23.32	3.11	124	21.30	23.46	2.16
Hispanic	15	19.33	23.70	4.37	21	24.45	28.26	3.81
School								
Coulter	5	18.50	21.10	2.60	5	19.40	22.90	3.50
Heavenrich	4	18.88	17.67	-1.21	6	19.58	18.75	-0.83
Herig	12	20.71	26.42	5.71	15	22.50	28.60	6.10
Houghton	5	15.40	16.60	1.20	7	22.29	22.57	0.29
Jerome	7	18.71	17.07	-1.64	6	19.25	20.58	1.33
Kempton	5	19.70	24.10	4.40	7	20.07	26.93	6.86
Longfellow	5	17.70	25.60	7.90	6	23.25	28.33	5.08
Loomis	18	21.25	25.08	3.83	18	19.44	20.86	1.42
Merrill Park	6	24.67	22.33	-2.33	3	10.17	8.17	-2.00

exhibit continues

Exhibit E4 (continued)

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Miller	4	12.38	16.75	4.38	3	25.17	30.17	5.00
Rouse	8	19.06	24.19	5.13	7	21.57	22.57	1.00
Stone	4	19.50	16.50	-3.00	3	15.83	5.50	-10.33
Arthur Eddy	11	25.86	27.32	1.45	9	23.44	24.72	1.28
Zilwaukee	3	21.33	28.33	7.00	8	22.00	30.44	8.44
Ruben Daniels	37	19.42	23.47	4.05	37	20.76	22.38	1.62
Thompson	21	22.62	26.60	3.98	22	27.27	29.07	1.80

Exhibit E5
SRI Means by Subgroup

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Grade								
4	31	141.74	214.97	73.23	28	128.68	185.96	57.29
5	54	238.19	373.44	135.26	59	326.25	404.73	78.47
6	33	500.97	551.39	50.42	35	480.20	439.11	-41.09
7	19	343.58	477.42	133.84	17	381.76	378.35	-3.41
8	18	374.83	587.89	213.06	23	426.48	426.74	0.26
Decoding Status[a]								
Pre decoder	2	250.00	253.50	3.50	5	278.00	226.80	-51.20
Beginning decoder	71	205.92	327.44	121.52	63	228.87	260.89	32.02
Developing decoder	82	389.55	499.07	109.52	94	427.12	458.85	31.73
FRL Status								
None	7	228.43	419.14	190.71	6	547.17	569.67	22.50
Free or Reduced-Price	148	307.19	417.20	110.01	156	337.66	367.21	29.54
ELL Status								
English only	149	304.36	417.51	113.15	153	348.13	379.85	31.72
English learner	6	285.67	411.67	126.00	9	299.33	287.22	-12.11
SPED Status								
None	71	435.52	546.30	110.77	81	416.63	469.56	52.93
Learning disability	84	192.15	308.24	116.08	81	274.21	279.85	5.64
Ethnicity								
Caucasian	16	371.81	472.69	100.88	17	353.06	458.06	105.00
African American	124	285.89	399.46	113.57	124	339.70	360.06	20.36
Hispanic	15	377.60	505.53	127.93	21	373.00	393.67	20.67
School								
Coulter	5	51.20	215.80	164.60	5	348.40	290.20	-58.20
Heavenrich	4	253.25	219.00	-34.25	6	260.00	129.83	-130.17
Herig	12	269.33	566.33	297.00	15	281.07	435.73	154.67
Houghton	5	204.40	230.60	26.20	7	197.29	241.86	44.57
Jerome	7	107.71	130.29	22.57	6	205.50	275.83	70.33
Kempton	5	192.00	535.60	343.60	7	300.43	352.71	52.29
Longfellow	5	119.20	187.40	68.20	6	298.83	422.83	124.00
Loomis	18	379.56	422.11	42.56	18	349.11	515.89	166.78
Merrill Park	6	146.83	326.50	179.67	3	60.67	145.00	84.33

exhibit continues

Exhibit E5 (continued)

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Miller	4	328.00	501.25	173.25	3	383.67	293.67	-90.00
Rouse	8	200.13	279.13	79.00	7	296.86	259.00	-37.86
Stone	4	206.75	257.50	50.75	3	201.00	218.00	17.00
Arthur Eddy	11	370.27	451.36	81.09	9	403.00	482.11	79.11
Zilwaukee	3	404.33	419.67	15.33	8	483.25	505.25	22.00
Ruben Daniels	37	400.49	482.65	82.16	37	400.14	390.54	-9.59
Thompson	21	365.38	540.05	174.67	22	424.27	349.18	-75.09

Exhibit E6
SPI Overall Accuracy Means by Subgroup

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Grade								
4	31	30.16	37.61	7.45	28	31.93	37.96	6.04
5	54	34.94	41.49	6.55	59	35.88	43.17	7.29
6	33	38.70	47.09	8.40	35	38.80	45.39	6.59
7	19	36.05	44.83	8.78	17	37.00	42.67	5.67
8	18	38.72	47.61	8.89	23	38.48	43.20	4.72
Decoding Status[a]								
Pre decoder	2	23.00	33.00	10.00	5	32.40	44.20	11.80
Beginning decoder	71	31.87	39.13	7.26	63	31.95	38.76	6.81
Developing decoder	82	38.68	46.67	7.99	94	39.45	45.03	5.59
FRL Status								
None	7	32.00	40.57	8.57	6	43.33	50.33	7.00
Free or Reduced-Price	148	35.52	43.14	7.62	156	36.04	42.35	6.30
ELL Status								
English only	149	35.51	43.22	7.71	153	36.26	42.75	6.49
English learner	6	31.67	38.17	6.50	9	37.22	41.22	4.00
SPED Status								
None	71	39.55	47.23	7.68	81	39.60	45.80	6.20
Learning disability	84	31.82	39.24	7.42	81	33.02	39.22	6.19
Ethnicity								
Caucasian	16	36.25	45.47	9.22	17	35.35	41.47	6.12
African American	124	35.34	42.83	7.49	124	36.37	42.75	6.37
Hispanic	15	34.60	42.13	7.53	21	36.76	43.15	6.39
School								
Coulter	5	27.20	38.20	11.00	5	37.40	46.80	9.40
Heavenrich	4	31.50	42.25	10.75	6	37.50	39.00	1.50
Herig	12	36.75	43.45	6.70	15	35.13	42.07	6.93
Houghton	5	36.20	38.80	2.60	7	36.57	40.57	4.00
Jerome	7	30.43	29.00	-1.43	6	31.50	40.83	9.33
Kempton	5	34.40	47.80	13.40	7	35.71	44.43	8.71
Longfellow	5	29.40	41.00	11.60	6	35.00	42.67	7.67
Loomis	18	37.72	42.89	5.17	18	36.22	43.17	6.94
Merrill Park	6	30.00	36.83	6.83	3	21.67	25.67	4.00

exhibit continues

Exhibit E6 (continued)

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Miller	4	36.25	45.00	8.75	3	41.33	47.33	6.00
Rouse	8	33.25	42.38	9.13	7	32.29	40.29	8.00
Stone	4	33.50	36.25	2.75	3	22.00	31.00	9.00
Arthur Eddy	11	35.55	42.25	6.70	9	40.33	46.56	6.22
Zilwaukee	3	33.67	44.33	10.67	8	39.63	45.13	5.50
Ruben Daniels	37	37.70	47.14	9.43	37	36.59	43.55	6.95
Thompson	21	36.86	45.10	8.24	22	39.64	43.62	3.98

Exhibit E7
SPI Overall Fluency Means by Subgroup

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Grade								
4	31	7.77	11.39	3.61	28	8.86	10.71	1.86
5	54	9.63	14.75	5.12	59	10.54	14.47	3.93
6	33	13.55	16.41	2.86	35	13.31	15.12	1.81
7	19	14.79	17.67	2.88	17	14.12	16.13	2.02
8	18	14.50	14.83	0.33	23	15.22	18.00	2.78
Decoding Status[a]								
Pre decoder	2	5.50	8.00	2.50	5	6.60	15.00	8.40
Beginning decoder	71	5.75	10.71	4.96	63	6.10	9.90	3.80
Developing decoder	82	16.23	18.48	2.25	94	16.05	17.46	1.40
FRL Status								
None	7	10.71	12.86	2.14	6	16.00	21.67	5.67
Free or Reduced-Price	148	11.32	14.86	3.54	156	11.73	14.26	2.53
ELL Status								
English only	149	11.39	14.58	3.19	153	11.93	14.45	2.52
English learner	6	8.83	19.33	10.50	9	11.22	16.22	5.00
SPED Status								
None	71	13.48	18.08	4.61	81	13.57	17.22	3.65
Learning disability	84	9.44	11.78	2.34	81	10.21	11.62	1.41
Ethnicity								
Caucasian	16	9.13	16.00	6.88	17	10.00	13.65	3.65
African American	124	11.70	14.45	2.75	124	11.95	14.33	2.38
Hispanic	15	10.20	16.07	5.87	21	13.05	16.60	3.55
School								
Coulter	5	8.00	11.60	3.60	5	9.80	14.00	4.20
Heavenrich	4	8.00	14.25	6.25	6	9.50	13.50	4.00
Herig	12	9.75	18.55	8.80	15	8.00	12.20	4.20
Houghton	5	2.60	7.20	4.60	7	6.86	9.57	2.71
Jerome	7	6.57	10.14	3.57	6	8.83	13.00	4.17
Kempton	5	8.00	15.60	7.60	7	14.14	18.00	3.86
Longfellow	5	11.20	12.40	1.20	6	12.00	15.00	3.00
Loomis	18	12.28	14.39	2.11	18	13.61	14.56	0.94
Merrill Park	6	7.67	11.67	4.00	3	7.67	7.00	-0.67

exhibit continues

Exhibit E7 (continued)

	Treatment				Control			
Subgroup	***n***	**Pretest**	**Posttest**	**Gain**	***n***	**Pretest**	**Posttest**	**Gain**
Miller	4	11.50	12.00	0.50	3	11.33	19.67	8.33
Rouse	8	10.00	17.50	7.50	7	8.00	14.71	6.71
Stone	4	6.00	12.25	6.25	3	5.00	5.33	0.33
Arthur Eddy	11	12.00	23.00	11.00	9	12.89	13.33	0.44
Zilwaukee	3	12.33	14.67	2.33	8	12.38	21.00	8.63
Ruben Daniels	37	14.24	13.59	-0.65	37	12.76	13.45	0.69
Thompson	21	13.95	17.60	3.65	22	16.73	18.76	2.03

Appendix F
Effect Sizes for Tests By Reading Domain

Exhibit F1
Effect Sizes for Individual, SRI, and SPI Tests By Reading Domain

Reading Domain	Sample			
	Overall	Learning Disabled	Elementary School	Middle School
Phonemic awareness				
CTOPP Elision	0.27**	0.36**	0.26*	0.30**
Letter identification				
SPI Letter Name Accuracy	0.06	0.15	0.18	-0.21
Phonics				
TOWRE Phonetic Decoding Efficiency[b]	-0.09	-0.01	0.09	0.19
TOWRE Sight Word Efficiency	0.16**	0.24*	0.17+	0.24**
SPI Sight Word Accuracy	-0.05	-0.02	-0.16	0.12
SPI Sight Word Fluency	0.17+	0.28*	0.18	0.16
SPI Nonsense Word Accuracy	0.32***	0.36**	0.10	0.59***
SPI Nonsense Word Fluency	0.10	0.03	0.10	0.06
Reading comprehension				
TOSREC	-0.03	0.07	-0.15	0.20+
SRI	0.32***	0.34***	0.13	0.49***

+$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

Appendix G
Student Characteristics

Exhibit G1
Characteristics of Students by Exit Status

Characteristic	Exit Status	
	Early (*n* = 11)	End of Year (*n* = 142)
Grade Level		
4	0 (0%)	31 (100%)
5	4 (7%)	50 (93%)
6	3 (10%)	28 (90%)
7	2 (11%)	17 (89%)
8	2 (11%)	16 (89%)
Sex		
Male	7 (8%)	86 (92%)
Female	4 (7%)	56 (93%)
Free or Reduced-Price Meals		
None	1 (14%)	6 (86%)
Reduced-price	10 (7%)	136 (93%)
English Learner Status		
English only	11 (7%)	136 (93%)
English learner	0 (0%)	6 (100%)
Special Education Status		
None	8 (11%)	62 (89%)
Specific learning disability	3 (4%)	80 (96%)
Ethnicity		
Caucasian	4 (25%)	12 (75%)
African American	6 (5%)	116 (95%)
Hispanic	1 (7%)	14 (93%)
School		
Coulter	0 (0%)	5 (100%)
Heavenrich	0 (0%)	4 (100%)
Herig	2 (17%)	10 (83%)
Houghton	0 (0%)	5 (100%)
Jerome	0 (0%)	7 (100%)
Kempton	1 (20%)	4 (80%)
Longfellow	0 (0%)	5 (100%)
Loomis	1 (6%)	17 (94%)
Merrill Park	0 (0%)	6 (100%)

exhibit continues

Exhibit G1 (continued)

Characteristic	Exit Status	
	Early (*n* = 11)	End of Year (*n* = 142)
Miller	0 (0%)	4 (100%)
Rouse	1 (13%)	7 (88%)
Stone	0 (0%)	4 (100%)
Arthur Eddy	1 (9%)	10 (91%)
Zilwaukee	0 (0%)	3 (100%)
Ruben Daniels	0 (0%)	35 (100%)
Thompson	5 (24%)	16 (76%)

Note. Only 2 students were pre-decoders and are not included in this table.

Exhibit G2
Characteristics of Students by Total Number of Topics Completed

Characteristic	Number of Completed Topics		
	Less Than 40 (*n* = 42)	40 to 99 (*n* = 47)	100 to 160 (*n* = 46)
Grade Level			
4	20 (65%)	9 (29%)	2 (6%)
5	16 (30%)	22 (41%)	16 (30%)
6	10 (30%)	10 (30%)	13 (39%)
7	2 (11%)	9 (47%)	8 (42%)
8	4 (22%)	7 (39%)	7 (39%)
Sex			
Male	32 (34%)	34 (36%)	28 (30%)
Female	20 (33%)	23 (38%)	18 (30%)
Free or Reduced-Price Meals			
None	2 (29%)	3 (43%)	2 (29%)
Reduced-price	50 (34%)	54 (36%)	44 (30%)
English Learner Status			
English only	50 (34%)	55 (37%)	44 (30%)
English learner	2 (33%)	2 (33%)	2 (33%)
Special Education Status			
None	14 (20%)	24 (34%)	32 (46%)
Specific learning disability	37 (44%)	33 (39%)	14 (17%)
Ethnicity			
Caucasian	4 (25%)	5 (31%)	7 (44%)
African American	43 (35%)	47 (38%)	34 (27%)
Hispanic	5 (33%)	5 (33%)	5 (33%)
School			
Coulter	2 (40%)	2 (40%)	1 (20%)
Heavenrich	4 (100%)	0 (0%)	0 (0%)
Herig	0 (0%)	4 (33%)	8 (67%)
Houghton	2 (40%)	3 (60%)	0 (0%)
Jerome	4 (57%)	3 (43%)	0 (0%)
Kempton	0 (0%)	3 (60%)	2 (40%)
Longfellow	3 (60%)	2 (40%)	0 (0%)
Loomis	9 (50%)	6 (33%)	3 (17%)
Merrill Park	3 (50%)	3 (50%)	0 (0%)

exhibit continues

Exhibit G2 (continued)

Characteristic	Number of Completed Topics		
	Less Than 40 (*n* = 42)	40 to 100 (*n* = 47)	100 to 160 (*n* = 46)
Miller	1 (25%)	3 (75%)	0 (0%)
Rouse	2 (25%)	2 (25%)	4 (50%)
Stone	2 (50%)	1 (25%)	1 (25%)
Arthur Eddy	5 (45%)	3 (27%)	3 (27%)
Zilwaukee	1 (33%)	1 (33%)	1 (33%)
Ruben Daniels	11 (30%)	14 (38%)	12 (32%)
Thompson	3 (14%)	7 (33%)	11 (52%)

Exhibit G3
Characteristics of Students by Initial Decoding Status

Characteristic	Decoding Status	
	Beginning (*n* = 71)	Developing (*n* = 82)
Grade Level		
4	24 (77%)	7 (23%)
5	26 (49%)	27 (51%)
6	11 (33%)	22 (67%)
7	4 (22%)	14 (78%)
8	6 (33%)	12 (67%)
Sex		
Male	45 (49%)	47 (51%)
Female	26 (43%)	35 (57%)
Free or Reduced-Price Meals		
None	4 (57%)	3 (43%)
Reduced-price	67 (46%)	79 (54%)
English Learner Status		
English only	68 (46%)	79 (54%)
English learner	3 (50%)	3 (50%)
Special Education Status		
None	27 (38%)	44 (62%)
Specific learning disability	44 (54%)	38 (46%)
Ethnicity		
Caucasian	9 (56%)	7 (44%)
African American	53 (43%)	69 (57%)
Hispanic	9 (60%)	6 (40%)
School		
Coulter	3 (60%)	2 (40%)
Heavenrich	2 (50%)	2 (50%)
Herig	6 (50%)	6 (50%)
Houghton	5 (100%)	0 (0%)
Jerome	5 (71%)	2 (29%)
Kempton	4 (80%)	1 (20%)
Longfellow	1 (25%)	3 (75%)
Loomis	9 (50%)	9 (50%)
Merrill Park	4 (67%)	2 (33%)

exhibit continues

Exhibit G3 (continued)

Characteristic	Decoding Status	
	Beginning (*n* = 71)	Developing (*n* = 82)
Miller	2 (50%)	2 (50%)
Rouse	5 (63%)	3 (38%)
Stone	3 (75%)	1 (25%)
Arthur Eddy	4 (36%)	7 (64%)
Zilwaukee	1 (33%)	2 (67%)
Ruben Daniels	11 (31%)	25 (69%)
Thompson	6 (29%)	15 (71%)

Note. Only 2 students were pre-decoders and are not included in this table.

Appendix H
Baseline Equivalence Tests

Exhibit H1
Baseline Equivalence of Exit Status Groups on Outcome Measures and Demographic Characteristics

	Exit Status						
	Early			End-of-Year			
Baseline Characteristic	***n***	***M***	***SD***	***n***	***M***	***SD***	***p***
TOSREC[a]	11	27.40	13.82	141	13.68	13.04	.001
CTOPP Elision[b]	11	21.27	5.59	142	17.83	5.83	.061
TOWRE Sight Word Efficiency[b]	11	63.68	5.06	141	50.18	15.33	.004
TOWRE Phonetic Decoding Efficiency[b]	11	30.68	7.23	142	19.63	10.99	.001
SRI[d]	11	594.27	242.77	142	277.52	259.45	.000
SPI Letter Name Accuracy[c]	11	10.73	0.65	142	10.82	0.45	.508
SPI Sight Word Accuracy[c]	11	23.45	2.34	142	18.68	4.96	.002
SPI Sight Word Fluency[c]	11	9.00	3.82	142	5.98	4.09	.019
SPI Nonsense Word Accuracy[c]	11	21.09	3.99	142	15.82	4.24	.000
SPI Nonsense Word Fluency[c]	11	7.27	2.69	142	4.96	3.32	.027
SPI Overall Accuracy[c]	11	44.55	4.57	142	34.51	7.84	.000
SPI Overall Fluency[c]	11	16.27	5.92	142	10.94	6.37	.008
Female	11	.36	.50	142	.39	.49	.842
Black	11	.55	.52	142	.82	.39	.031
Hispanic	11	.09	.30	142	.10	.30	.935
SPED Status	11	.27	.47	142	.56	.50	.063
ELL Status	11	.00	.00	142	.04	.20	.490

[a]Pretest assessment was analyzed using normal curve equivalent scores that ranged from 1 to 99.
[b]Assessment was analyzed using raw scores. [c]Assessment was analyzed using scaled scores.
[d]Assessment was analyzed using Lexile scores.

Exhibit H2
Baseline Equivalence of Topic Completion Groups on Outcome Measures and Demographic Characteristics

Baseline Characteristic	Number of Completed Topics									
	Less Than 40			40 to 99			100 to 160			
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*p*
TOSREC[a]	51	8.88	10.95	57	13.99	11.94	46	22.58	14.51	.000
CTOPP Elision[b]	52	16.85	5.58	57	17.07	5.41	46	20.76	5.84	.001
TOWRE Sight Word Efficiency[b]	51	39.07	12.90	57	52.95	13.50	46	62.28	8.43	.000
TOWRE Phonetic Decoding Efficiency[b]	52	14.28	7.26	57	20.03	11.55	46	27.83	9.60	.000
SRI[d]	52	150.88	207.64	57	297.19	246.39	46	484.28	255.68	.000
SPI Letter Name Accuracy[c]	52	10.85	0.36	57	10.74	0.58	46	10.89	0.38	.213
SPI Sight Word Accuracy[c]	52	16.13	5.10	57	19.32	4.50	46	22.17	3.24	.000
SPI Sight Word Fluency[c]	52	3.42	3.06	57	6.40	3.76	46	9.00	3.57	.000
SPI Nonsense Word Accuracy[c]	52	13.75	3.95	57	15.58	3.74	46	19.96	3.23	.000
SPI Nonsense Word Fluency[c]	52	3.15	2.49	57	5.04	3.05	46	7.43	3.08	.000
SPI Overall Accuracy[c]	52	29.88	7.63	57	34.89	6.76	46	42.13	4.57	.001
SPI Overall Fluency[c]	52	6.58	4.56	57	11.44	5.62	46	16.43	5.14	.000
Female	52	.38	.49	57	.40	.49	46	.39	.49	.980
Black	52	.83	.38	57	.82	.38	46	.74	.44	.474
Hispanic	52	.10	.30	57	.09	.29	46	.11	.31	.939
SPED Status	52	.71	.46	57	.58	.50	46	.30	.47	.000
ELL Status	52	.04	.19	57	.04	.19	46	.04	.21	.977

[a]Pretest assessment was analyzed using normal curve equivalent scores that ranged from 1 to 99. [b]Assessment was analyzed using raw scores. [c]Assessment was analyzed using scaled scores. [d]Assessment was analyzed using Lexile scores.

Exhibit H3
Baseline Equivalence of Initial Decoding Status Groups on Outcome Measures and Demographic Characteristics

	Decoding Status						
	Beginning Decoder			Developing Decoder			
Baseline Characteristic	***n***	***M***	***SD***	***n***	***M***	***SD***	***p***
TOSREC[a]	70	12.11	13.62	82	17.23	13.12	.066
CTOPP Elision[b]	71	17.21	5.71	82	19.00	5.82	.054
TOWRE Sight Word Efficiency[b]	70	42.71	14.65	82	58.61	11.06	.000
TOWRE Phonetic Decoding Efficiency[b]	71	15.91	8.26	82	24.66	11.48	.000
SRI[d]	71	205.92	233.49	82	389.55	272.77	.000
SPI Letter Name Accuracy[c]	71	10.79	0.44	82	10.84	0.48	.672
SPI Sight Word Accuracy[c]	71	16.79	4.89	82	21.16	4.12	.000
SPI Sight Word Fluency[c]	71	2.97	2.49	82	9.00	3.04	.000
SPI Nonsense Word Accuracy[c]	71	15.08	4.00	82	17.52	4.28	.000
SPI Nonsense Word Fluency[c]	71	2.77	2.33	82	7.23	2.60	.000
SPI Overall Accuracy[c]	71	31.87	7.65	82	38.68	7.00	.000
SPI Overall Fluency[c]	71	5.75	4.03	82	16.23	3.50	.000
Female	71	.37	.49	82	.43	.50	.391
Black	71	.75	.44	82	.84	.37	.269
Hispanic	71	.13	.34	82	.07	.26	.485
SPED Status	71	.62	.49	82	.46	.50	.066
ELL Status	71	.04	.20	82	.04	.19	.945

[a]Pretest assessment was analyzed using normal curve equivalent scores that ranged from 1 to 99.
[b]Assessment was analyzed using raw scores. [c]Assessment was analyzed using scaled scores.
[d]Assessment was analyzed using Lexile scores.

Appendix I
System 44 Software Usage Descriptives

Exhibit I1
System 44 Software Usage Descriptives

Subgroup	*n*	Total Sessions		Total Topics Completed		Total Hours on Software		Number of Topics Fast-Tracked		Median Session Time		Weeks in System 44		Number of Sessions Per Week	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Grade															
4	31	77.32	16.93	48.65	37.76	22.10	11.56	10.77	21.48	15.42	5.41	30.40	1.98	2.54	0.51
5	54	75.63	14.10	73.80	50.69	22.25	9.72	32.31	36.39	18.22	5.75	29.79	2.82	2.55	0.44
6	33	70.94	23.93	88.88	56.29	17.13	7.14	51.18	45.78	13.76	4.42	27.48	4.14	2.54	0.69
7	19	81.68	17.64	100.47	48.01	24.38	7.73	48.63	35.64	18.89	3.98	28.41	4.58	2.91	0.55
8	18	71.72	18.18	86.72	48.67	20.58	9.21	43.89	39.53	16.00	4.23	27.80	4.74	2.60	0.53
Decoding Status[a]															
Beginning decoder	71	75.13	17.19	48.37	38.53	22.13	9.91	8.38	21.94	16.49	5.64	29.75	2.42	2.52	0.53
Developing decoder	82	75.87	18.87	102.76	47.26	20.68	9.12	59.60	34.54	16.65	5.16	28.33	4.38	2.68	0.54
FRL Status															
None	7	81.43	13.72	80.71	44.78	26.44	11.69	31.14	40.81	18.14	5.08	28.67	2.16	2.84	0.41
Free or Reduced-Price	148	74.97	18.26	76.56	51.66	20.95	9.39	35.57	38.91	16.46	5.36	29.04	3.71	2.58	0.55
ELL Status															
English only	149	75.11	18.21	76.45	51.01	21.05	9.44	35.36	38.76	16.45	5.36	28.98	3.69	2.59	0.55
English learner	6	79.00	15.97	84.17	61.65	24.77	12.12	35.50	45.47	18.67	5.05	30.14	2.30	2.65	0.59
SPED Status															
None	71	75.83	17.44	94.66	52.05	21.76	9.52	48.76	41.71	16.93	5.03	28.52	3.63	2.66	0.49
Learning disability	84	74.77	18.73	61.61	45.62	20.72	9.57	24.05	32.45	16.20	5.61	29.45	3.63	2.54	0.59

exhibit continues

Exhibit I1 (continued)

Subgroup	*n*	Total Sessions		Total Topics Completed		Total Hours on Software		Number of Topics Fast-Tracked		Median Session Time		Weeks in System 44		Number of Sessions Per Week	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Ethnicity															
Caucasian	16	76.06	20.41	95.69	56.66	26.86	11.67	44.44	45.17	21.44	6.24	27.25	5.34	2.82	0.61
African American	124	74.57	18.27	72.85	49.83	19.97	8.66	34.00	37.62	15.73	4.95	29.18	3.46	2.55	0.54
Hispanic	15	80.07	13.92	88.80	54.15	25.31	11.28	37.00	43.42	18.00	4.69	29.59	2.52	2.72	0.45
Elementary School															
Coulter	5	87.80	10.99	50.80	37.56	21.54	5.38	18.20	26.44	19.80	4.60	33.26	0.59	2.64	0.35
Heavenrich	4	44.00	8.76	28.75	10.14	9.57	1.89	12.00	13.86	9.50	4.51	29.29	1.72	1.50	0.26
Herig	12	87.08	14.17	133.08	37.20	38.41	7.63	57.00	35.99	23.50	3.63	28.89	3.13	3.01	0.36
Houghton	5	65.60	5.55	38.00	10.49	28.55	5.71	1.40	3.13	26.80	4.02	28.80	2.02	2.28	0.15
Jerome	7	72.00	13.29	40.57	25.41	16.76	4.86	9.86	17.48	14.00	2.89	33.90	0.29	2.12	0.40
Kempton	5	86.00	9.75	97.80	39.51	35.08	5.61	26.60	40.98	19.60	7.89	28.46	2.17	3.02	0.24
Longfellow	5	69.60	12.70	31.60	14.77	9.69	4.47	14.40	13.15	15.00	3.08	31.17	1.21	2.22	0.34
Loomis	18	71.67	9.11	60.72	42.58	15.59	3.56	29.06	36.88	13.94	2.75	28.41	3.02	2.53	0.24
Merrill Park	6	92.00	7.13	42.50	15.35	20.86	1.35	8.50	12.79	13.50	1.76	31.02	0.96	2.96	0.18
Miller	4	59.25	2.50	53.75	12.28	18.01	0.75	15.50	14.29	20.75	0.50	25.75	0.69	2.30	0.06
Rouse	8	85.00	10.24	99.00	60.63	27.09	5.60	47.50	51.46	17.25	3.77	30.50	3.32	2.79	0.13
Stone	4	86.00	4.55	64.00	54.56	27.18	2.67	23.75	46.84	18.00	1.63	30.11	0.21	2.86	0.16
K–8 School															
Arthur Eddy	11	65.18	12.60	70.64	59.39	14.84	3.11	40.64	51.32	14.64	4.76	27.78	3.96	2.37	0.46
Zilwaukee	3	69.33	3.06	86.00	57.42	18.62	0.53	46.67	49.74	17.67	2.31	30.24	0.66	2.29	0.07
Middle School															
Ruben Daniels	37	73.78	23.50	75.84	47.87	18.20	9.09	37.62	30.47	13.32	3.99	29.31	3.03	2.47	0.67
Thompson	21	77.95	20.10	112.24	52.47	23.76	7.47	61.33	47.85	19.38	4.07	25.85	5.25	3.03	0.49

[a]Pre-decoders (*n* = 2) were excluded from the analyses.