

## RESEARCH UPDATE

## 3 Public School Districts

Indiana, Massachusetts, and Michigan

# *System 44*<sup>®</sup> Research Project Reveals Improved Decoding and Reading Achievement for Students with Learning Disabilities

**PROFILE**

**Districts:** Public school districts in central Indiana, southeastern Michigan, and eastern Massachusetts

**Evaluation Period:** 2009–2010 School Year

**Grades:** 3–11

**Model:** *System 44* Standalone Classrooms

**Assessment:** Scholastic Reading Inventory (SRI), Test of Word Reading Efficiency (TOWRE) and Woodcock Johnson III (WJ III)

**DISTRICT CHARACTERISTICS**

This study was designed to evaluate the impact of the *System 44* intervention program in three public school districts, situated in central Indiana, southeastern Michigan, and eastern Massachusetts. Total student enrollment in these three urban districts varied from 12,220 to 16,536 students, representing a diverse mix of English learners and special education students. Across the three districts, a total of 331 students participated in *System 44* during the 2009–2010 school year. Approximately one-third, or 117, of the *System 44* students were designated to receive special education services, and 85 of these special education students were specifically diagnosed with a learning disability. In order to better understand the impact of *System 44* for students with learning disabilities who have been identified for reading intervention, this Research Update focuses solely on the group of students with learning disabilities. Additional Research Updates will focus on the results for the overall sample of students served in this study.

**OVERVIEW**

During the 2009–2010 school year, the three public school

districts in Indiana, Michigan, and Massachusetts piloted *System 44* with their most challenged readers who had not yet mastered basic phonics and decoding skills.

**Implementation Model**

*System 44* was implemented using a standalone model in all three districts. In one district, *System 44* was implemented in a 60-minute classroom period. In this model, a 10-minute whole-group introduction, in which the teacher led a short warm-up activity to engage students and build phonemic awareness and phonics skills, was followed by 25-minute rotations on the instructional software and in small-group instruction. In the other two districts, *System 44* classroom periods ranged from 50 to 90 minutes. In all of these classrooms, students participated in whole-group and small-group instruction and were expected to use the software for at least 25 minutes a day. For the purposes of this analysis all models were analyzed together.

**Participants**

A total of 85 third- through eleventh-grade *System 44* students classified as having a learning disability comprise the sample of this report. Students were placed into *System 44* if they performed poorly on an assessment of reading comprehension, the Scholastic Reading Inventory (SRI), and then exhibited poor word reading skills on the Scholastic Phonics Inventory (SPI). Of the 85 students with a learning disability, 30 (35%) were elementary school students, 35 (41%) were middle school students, and 20 (24%) were high school students. The sample varied ethnically, with 40% Hispanic, 25% Caucasian, 25% African American, and 10% multiethnic (see Table 1).

## Measures

### Scholastic Reading Inventory (SRI)

The SRI measures reading comprehension by focusing on the following skills: identifying details in a passage; recognizing cause-and-effect relationships; pinpointing sequence of events; drawing conclusions; and making comparisons and generalizations. During test administration, the computer adapts the test continually, according to student responses. Performance on the SRI is reported as a Lexile® (L) scale score. Scores can range from Beginner Reader (less than 100L) to Graduate-School Reader (1500L). The SRI was administered in October/November 2009 and in April/May 2010.

### Woodcock Johnson III (WJ III)

The nationally normed Letter Word Identification and Word Attack subtests from the WJ III were administered in fall 2009 and spring 2010. Letter Word Identification requires identifying isolated letters and words. Word Attack assesses nonword reading ability. The Basic Reading Skills cluster score is based on the combined performance on the two subtests.

### Test of Word Reading Efficiency (TOWRE)

The nationally normed Sight Word Efficiency and Phonemic Decoding Efficiency subtests from the TOWRE were administered in fall 2009 and spring 2010. The Sight Word subtest requires recognizing familiar words as whole units or “sight words,” and the Phonemic Decoding Efficiency subtests measures students’ ability to “sound out” nonwords. The TOWRE Total Word Reading Efficiency score is based on the combined performance on the two subtests.

## RESULTS

### SRI Results

In order to measure changes in reading comprehension skills, SRI data was gathered from 71 *System 44* students with learning disabilities who had valid pretest and posttest Lexile scores. Findings revealed that, on average, *System 44* students with learning disabilities improved from a pretest score of 157L to a posttest score of 241L, a statistically significant gain of 84L ( $t = 5.41, p = .00$ ) over the course of the school year (see Graph 1).

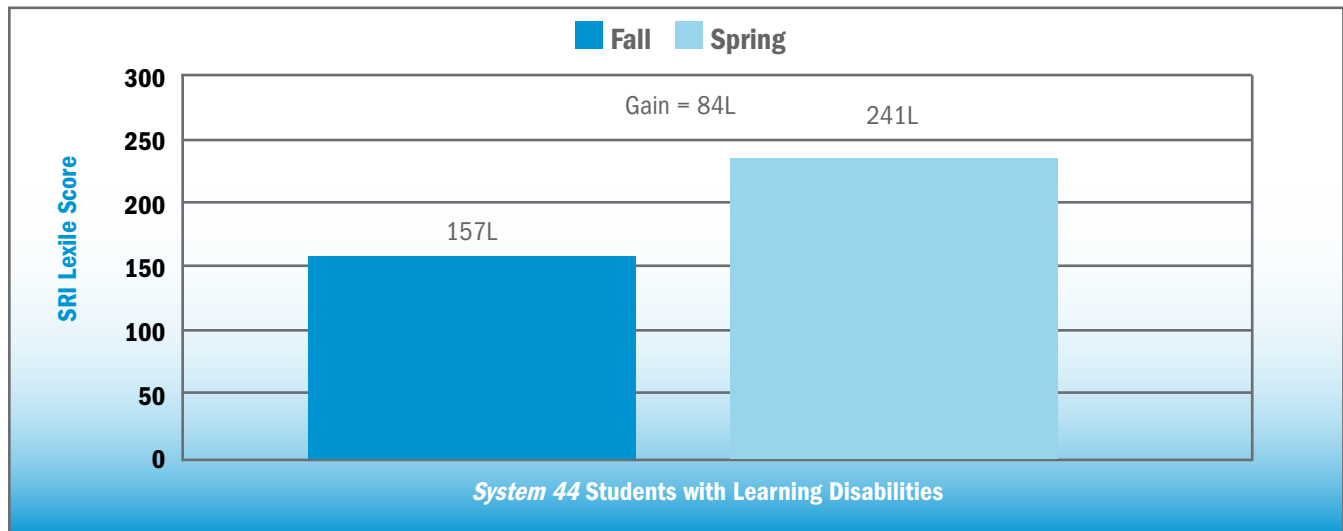
**Table 1.**

MI, IN, and MA *System 44* Students with Learning Disabilities, Grades 3-11 (N = 85)  
Demographic Characteristics of Students in Sample

District	Sample	African American	Hispanic	Caucasian	Multiethnic	English Language Learners
Michigan District	35	34%	23%	23%	20%	23%
Indiana District	31	29%	23%	42%	6%	19%
Massachusetts District	19	—	100%	—	—	26%
<b>TOTAL</b>	<b>85</b>	<b>25%</b>	<b>40%</b>	<b>25%</b>	<b>10%</b>	<b>22%</b>

**Graph 1**

MI, IN, and MA *System 44* Students with Learning Disabilities, Grades 3-11 (N = 71)  
Performance on SRI, 2009 and 2010



### WJ III and TOWRE Results

System 44 students with learning disabilities also exhibited significant improvements in their sight word reading and phonemic decoding skills. Results show that, overall, the students averaged a statistically significant standard score gain of 3 points on the WJ III and a statistically significant gain of 2 points on the TOWRE (see Table 2).

Additionally, an evaluation of changes in grade equivalent scores on the WJ III Basic Reading Skills Cluster showed that in 2009, prior to System 44, 90% of students in the sample performed below the fourth-grade equivalent. However, by spring 2010, the percentage of System 44 students with learning disabilities performing below the fourth grade level was reduced to 74%. Conversely, as Graph 2 points out, the percentage of students performing at the fourth-grade equivalent or higher more than doubled, from 11% to 26%.

### CONCLUSION

During the 2009–2010 school year, System 44 students with learning disabilities demonstrated significant improvements in their reading comprehension, sight word efficiency, and phonemic decoding skills. After one year of intervention, the System 44 students with learning disabilities demonstrated a significant gain in their SRI Lexile scores. Further, the students demonstrated significant gains on both the TOWRE Total Word Reading Efficiency and WJ III Basic Reading Skills tests, and significantly more scored at or above the fourth-grade equivalent on the WJ III Basic Reading Skills cluster. Taken together, these results provide preliminary evidence of effectiveness for System 44 students with learning disabilities in elementary, middle, and high schools.

**Table 2.**

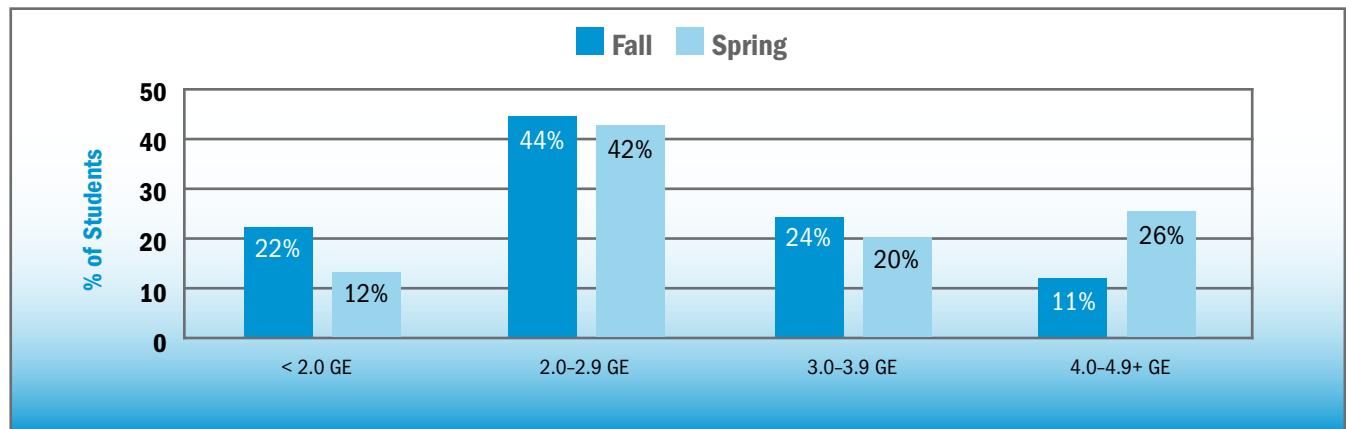
MI, IN, and MA System 44 Students with Learning Disabilities, Grades 3–11 (N= 85)  
Performance on the WJ III and TOWRE by School Level, 2009 and 2010

School Level	N	Fall WJ III Basic Reading Skills Standard Score	Spring WJ III Basic Reading Skills Standard Score	WJ III BRS Gain	Fall TOWRE Total Standard Score	Spring TOWRE Total Standard Score	TOWRE Total Gain
Elementary	30	81	83	+2	76	80	+4
Middle	35	69	72	+3	65	66	+1
High	20	56	62	+5	61	64	+3
All Students with Learning Disabilities	85	70	74	+3	68	71	+2

Note: Standard scores are rounded to the nearest integer. The gains on the WJ III and TOWRE are statistically significant (WJ III Basic Reading Skills cluster:  $t = 5.19, p = .00$ ; TOWRE Total Word Reading Efficiency:  $t = 4.40, p = .00$ ).

**Graph 2**

MI, IN, and MA System 44 Students with Learning Disabilities, Grades 3–11 (N= 85)  
Grade Equivalent (GE) Performance on the WJ III BRS, 2009 and 2010



Note: The increase in percentage of students performing at the fourth-grade equivalent or higher is significant ( $t = 3.34, p = .00$ )

# RESEARCH UPDATE



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