Examining the Effects of *SRA FLEX Literacy*® on Measures of Lexile® and Oral Reading Fluency With At-Risk Middle School Readers

Shannon Flaum-Horvath, Nancy E. Marchand-Martella, Ronald C. Martella, and Cassondra Kauppi

Abstract: *This study examined the effects of the SRA FLEX Literacy (FLEX) program provided to 44 middle school students considered at risk for reading failure as compared to their peers who were not at risk in reading (N = 197) who received instruction in the Holt Elements of Literature series. Two outcome measures were used to judge the effects of the programs on reading improvement–the Scholastic Reading Inventory® (SRI) Lexile assessment and the oral reading fluency (ORF) measure included in AIMSweb. Results indicated the FLEX students demonstrated greater SRI Lexile gains than did the comparison group. Additionally, the FLEX students demonstrated significant improvements in their AIMSweb ORF scores. These results are discussed in relation to the need for effective adolescent literacy programs for students at risk for school failure; areas of future research are also noted.*

The value of learning to read cannot be underestimated. In fact, "Learning to read is the most important skill our students can learn in school, serving as the very foundation of all other academic subjects" (Marchand-Martella, Martella, Modderman, Petersen, & Pan, 2013, p. 161). For adolescent readers, reading proficiency becomes even more critical. Students must read more complex text with higher levels of understanding to perform well in their middle school and high school classes and on high-stakes assessments as they develop the foundational college and career readiness skills to succeed in post-high school endeavors. Unfortunately, the vast majority (over 80%) of students with learning and behavior difficulties struggle in reading proficiently (Vaughn & Bos, 2015). According to the National Center for Education Statistics (2013), only 32% of eighth graders read proficiently (defined as demonstrating "solid academic performance and competency over challenging subject matter" [p. 7]); in fact, 64% scored at *basic* or *below basic* levels, making complex text and related comprehension activities difficult to navigate and understand.

A nationwide focus has been placed on adolescent literacy efforts. In fact, the International Literacy Association's *What's Hot* survey of literacy leaders noted adolescent literacy as *extremely hot* with 100% of survey respondents in agreement that focus should be placed on this area in 2016 (Cassidy, Grote-Garcia, & Ortlieb, 2015). Adolescent literacy is typically defined as focused reading instruction for those students in grades 4 to 12 (Biancarosa & Snow, 2006; Marchand-Martella et al., 2013). When efforts are intensified to promote higher levels of adolescent literacy, particularly for those who are at risk for school failure, researchers are in agreement that five components should be included in instruction (e.g., Boardman et al., 2008; Kamil et al., 2008; Marchand-Martella et al., 2013; Roberts, Torgesen, Boardman, & Scammacca, 2008; Scammacca et al., 2007; Torgesen et al., 2007). These five components include word study, fluency, vocabulary, comprehension, and motivation. Marchand-Martella et al. (2013) include focused overviews of each of these components. Word study involves word analysis and word recognition strategies with an emphasis on decoding multisyllabic words found in more complex text. Fluency includes activities with reading text in an effortless manner with focus on accuracy and prosody. Vocabulary instruction incorporates specific word instruction along with word-learning strategies such as context clues and glossary and dictionary use. Comprehension strategies are used to help students navigate more complex text with understanding; strategies such as summarizing, asking and answering questions, providing text evidence, and activating prior knowledge are often taught. Finally, motivation relates to providing interesting reading materials in interesting ways (e.g., computer-based literacy), increasing social interactions related to reading, and supporting student autonomy. These five components are critical *must haves* in adolescent literacy efforts, particularly for those who are at risk for school failure.

Further, the Common Core State Standards in English Language Arts (CCSS ELA; National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010) should be addressed (see Marchand-Martella & Martella, 2013, for details on incorporating CCSS ELA into adolescent literacy efforts). These standards serve as a roadmap of what skills should be acquired by grade level. Two sets of standards (K–5 and 6–12) are used with individual grade-level standards provided. Grade-level standards are noted for reading (foundational skills, informational text, and literature); writing; speaking and listening; and language. Adolescent literacy instruction for all learners should include skills aligned to the CCSS ELA.

One program that incorporates the five components of effective reading instruction for adolescents who are at risk for reading failure and is built to address the CCSS ELA is *SRA FLEX Literacy* (*FLEX;* Marchand-Martella et al., 2014). *FLEX* is a comprehensive reading and language arts intervention system for struggling readers in grades 3–5 (Elementary System) and grades 6–12 (Secondary System). Over 90% of the CCSS ELA are covered in the Elementary System with 85% of these standards formally assessed; in the Secondary System, 85% of the Standards are covered with 80% formally assessed.

In *FLEX*, students participate in three learning experiences (digital, print, and project). These experiences are designed to build college and career readiness skills and address word study, fluency, vocabulary, comprehension, and motivation. The digital experience includes computer-based learning with over 1,000 ELA objectives taught through approximately 5,000 activities. The digital experience covers CCSS ELA related to literature, informational text, foundational skills, and language. The print experience incorporates shared, interactive reading with a focus on complex text and includes 32 weeks of instruction. Teachers lead students in debate, discussion, and individualized skill application. The print experience covers CCSS ELA related to literature, informational text, and language. Finally, in the project experience students build higher-order thinking skills through writing-centered projects where they research, present, collaborate, reflect, and evaluate. Twenty projects include activities for each of 15 days of instruction. The project experience covers CCSS ELA in informational text; speaking; and listening, writing, and language.

Two prior investigations have been conducted using *FLEX*. First, Martella and Marchand-Martella (2015) examined key behavior management approaches related to academic and behavioral success that were integrated within *FLEX*. These management approaches have been shown to enhance classroom behavior and set the occasion for better academic performance. Specific program examples were shared to illustrate these management approaches in this paper. Second, Flaum-Horvath, Marchand-Martella, Martella, and Cleanthous (2015) examined the effects of a prepublication version of *FLEX*. The Lexile growth data gathered within the *FLEX* system were examined for 69 students at risk for school failure in grades 3 to 8 from five sites across five states. Teacher satisfaction with the program was also evaluated. Results showed a mean Lexile growth of 166.30L across the five sites (range: 56.11L for Site E to 317.31L for Site B). Also, 47.8% exceeded the expected Lexile growth from fall to spring assessments. On average, 29.32% (range: 5.06 for Site E to 67.14 for Site B; 12.51% for Grade 6 and 42.20% for Grade 5) of the expected yearly lessons were completed; the correlation between Lexile growth and percentage of yearly lessons completed for the program was statistically significant. Teachers also reported satisfaction with the program. The authors noted the following:

> Although the majority of the yearly lessons were not conducted, the mean Lexile growth across sites and grade levels was statistically significant. In fact, on average, students in grades 5, 7, and 8 exceeded the expected Lexile growth. This is notable, because once behind it is very difficult for lower-performing students to make the necessary expected gains. Although the average Lexile growth for students in grades 3, 4, and 6 was below the level expected for a year of instruction, their average gains were less than 28L of what would be expected. Also, almost 48% of students exceeded the expected Lexile growth. Importantly, there was a statistically significant relationship between Lexile growth and percentage of yearly lessons completed. Thus, the more lessons students completed, the greater gains they made…these results underscore the difficulty students at risk face when they fall behind in their reading skills. (p. 55)

No formal investigation of the published version of *FLEX* has been conducted. Further, no investigation has been done to date where middle school students who were at risk for school failure were targeted exclusively for remediation.

The purpose of this study was to examine the effects of *FLEX* using the published version of the program with middle school students identified as at risk for reading failure. Student Lexile growth and growth in oral reading fluency were targeted as measures.

Method

Setting and Participants

The site for this study was a middle school located in the eastern part of Washington state. At the time of program implementation, the school served 476 students in the sixth through eighth grades. The school population was predominantly Caucasian (90.5%) and of low socio-economic status (54.2%). Roughly 15% of students schoolwide were identified with special needs. The percentage of students identified as Limited English Proficient was negligible. On the 2014 administration of the state reading test, about 70% of sixth-grade students, 57% of seventh-grade students, and 73% of eighth-grade students schoolwide were considered proficient in reading.

Participants included 241 students in grades 7 and 8. Of these, 44 students were considered at risk in reading and were selected to receive Tier 3 reading support in FLEX through the school's Learning Assistance Program (LAP). These students were considered at risk in reading and were chosen based on scores from the Washington State Assessment Measurements of Student Progress (MSP; State of Washington OSPI, 2015), Scholastic Reading Inventory (*SRI*; Scholastic, 2015), and AIMSweb oral reading fluency (ORF) measures (Pearson, 2012). The criteria for entry into the FLEX program were that students had to be one or more grade levels below in reading and/or writing on two or more of the aforementioned assessments and did not receive special education services in the area of reading.

The remaining 197 students were not identified as at risk in reading based on the above measures and were not selected to receive instruction using *FLEX*. These students served as a comparison group, thus providing a metric by which to assess the reading gains of at-risk readers as compared to the reading gains of mostly typical readers. Table 1 presents a summary of characteristics for students receiving instruction using *FLEX* (the "*FLEX*" group) and students not receiving instruction using this program (the "comparison" group). As shown in Table 1, there was a higher percentage of seventh-grade students in the *FLEX* group (54.5%) than in the comparison group (46.7%). There was also a higher percentage of males (61.4%) than

females (38.6%) in the *FLEX* group, indicating that a higher percentage of males than females were identified as at risk in reading. The most frequently reported ethnicity for students in the *FLEX* and comparison groups was Caucasian, representing 88.6% and 81.2% of students, respectively. The majority of students (72.7%) in the *FLEX* group received free/reduced price meals, while slightly over half of students (53.8%) in the comparison group were known to receive free/reduced price meals. Free/reduced lunch status for 23.9% of the students (n = 47) in the comparison group was not provided by the district. A small percentage of students (6.8% for the *FLEX* group and 3.6% for the comparison group) received special education services in areas other than reading. Information regarding English Language Learner status was requested but not furnished by the district. Institutional Review Board approval was obtained through the University of Oklahoma.

Table 1

Student Demographics as a Percentage of the Sample by Group

Demographic	*FLEX* (n = 44)	Comparison (n = 197)
Grade		
7	54.5	46.7
8	45.5	53.3
Gender		
Female	38.6	48.2
Male	61.4	51.8
Ethnicity		
African American	6.8	0.5
Caucasian	88.6	81.2
Hispanic	4.5	5.1
Other Ethnicities	--	3.5
Missing	--	9.6
Free/Reduced Lunch		
Yes	72.7	53.8
No	27.3	22.3
Missing	--	23.9
Special Education		
Yes	6.8	3.6
No	93.2	96.4

Materials

The school implemented the published version of *FLEX*. The three experiences (digital, print, and project) were conducted. Those students not considered at risk in reading received instruction in the *Holt Elements of Literature* series (Beers, Jago, & Appleman, 2009, 2010).

Dependent Variable and Measures

The primary dependent variable was reading improvement. Reading improvement was assessed using two published measures: the *SRI* and the *AIM*Sweb ORF.

SRI. The *SRI* is a research-based computer-adaptive reading comprehension assessment that measures reading skill and text difficulty. The standard error of measurement for the *SRI* Lexile assessment is approximately 56L (Scholastic, 2012). The Lexile framework has strong validity; linking studies conducted with the Lexile framework and various standardized measures show correlations ranging from .60 to .93 (Stenner, Burdick, Sanford, & Burdick, 2007).

ORF. AIMSweb ORF measures were quick, 1-min administrations of a reading passage, during which students read aloud. The number of words correctly read within 1 min represents the ORF score. AIMSweb ORF measures possess strong technical adequacy. The alternate-form reliability for the mean of three probes at grades 7 and 8 were .92 and .97, respectively (Daniel, 2010), and the test-retest and split-half reliability estimates were in the 90s (Pearson, 2012). AIMSweb ORF scores correlate in the mid-to-low 60s with state reading tests for students in grades 6 through 8 (Pearson, 2012). There is a moderate correlation between AIMSweb ORF scores and Lexile Student-Ability measures, where r = .59 for grade 7 and r = .65 for grade 8 (Pearson, 2012).

Reading improvement. Reading improvement was determined by (a) fall to spring *SRI* Lexile gains, (b) percentage of students meeting their respective individual *SRI* Lexile growth expectations from fall to spring, and (c) fall to spring gain in words per minute (WPM) on the AIMSweb ORF measures. Fall to spring *SRI* Lexile gain was determined by subtracting each student's fall score from the spring score on the *SRI* Lexile assessment. The percentage of students meeting their individual *SRI* Lexile growth expectations was determined by first determining each student's expected growth based on the fall *SRI* Lexile score, in accordance with projections by Scholastic. The expected growth projection is based on fall *SRI* Lexile scores and indicates the growth needed to reach the 50th percentile in *SRI* Lexile performance for a given grade level (Scholastic, 2011). Then, the expected *SRI* Lexile growth was compared to the actual *SRI* Lexile growth. Fall to spring gain in WPM on the AIMSweb ORF measures was determined by subtracting each student's score on the fall administration of the ORF to the respective score on the spring administration of this measure. The annual expected growth is derived from ORF norms constructed by Hasbrouck and Tindal (2006). To test for differences in the mean gain in *SRI* Lexile score and AIMSweb WPM on the ORF, a 2 (instruction: FLEX and comparison) X 2 (grades: 7th and 8th) ANOVA was conducted. Differences were considered statistically significant at the $p < .05$ level.

Procedures

FLEX was implemented in four LAP classrooms or "blocks" across one academic year (36 weeks; September

to May). Daily blocks lasted 70 min. Two blocks served students in the seventh grade, and two blocks served students in the eighth grade. Students serving in the comparison group received English language arts instruction using *Holt Elements of Literature* series in 45-min daily classes. One teacher (fourth author) implemented *FLEX* and taught both seventh- and eighth-grade students. The teacher had a master's degree in teaching and eight years of experience. Two teachers implemented the comparison group literature series; these teachers had master's degrees in teaching and an average of 1.5 years of teaching experience (range one to two years).

The seventh- and eighth-grade students received instruction using the digital, print, and project experiences (full implementation). The digital and print experiences were implemented four days per week, and the project experience was implemented one day per week. Students completed one to two digital lessons per week and seven to 13 activities per lesson. They completed 27 weeks in the Print Secondary Volume A Edition and four project experiences. The first 10 min of each class period were devoted to entry tasks/silent reading. The next 50 min were devoted to the digital and print experiences, with students participating in 25 min each for both the digital experience and the print experience. The final 10 min were devoted to exit tasks. The exit tasks included additional review of vocabulary and grammar as well as completion of any tasks from the print experience that were not completed during the 25-min period. One day a week, students worked on the project experience. On these days, the first 10 min of each class period were devoted to entry tasks/silent reading, then the students participated in the project experience for 60 min.

Prior to implementing *FLEX*, during benchmark periods, and at the end of the year, students in the *FLEX* group and students in the comparison group were administered *SRI* Lexile assessments. Students in the *FLEX* and comparison groups were also administered ORF measures via AIMSweb. Students in the *FLEX* group were assessed prior to implementing *FLEX* and during an additional benchmark period (mid-year) for LAP participation; students in the comparison groups were assessed at the beginning and end of the year.

Procedural Fidelity

Prior to implementation, the *FLEX* teacher was provided one full day of training by educational consultants from McGraw-Hill Education. She received training on the digital, print, and project experiences. To ensure the program was implemented with integrity, a consultant from McGraw-Hill Education assisted the teacher in setting up her classroom. To assess the quality of program implementation, on-site visits were conducted three times per year (fall, winter, and spring) by program authors (second and third authors), who served as raters. Both raters visited each classroom and observed each class in its entirety. After each observation, raters provided feedback to the teacher. The results for each rater were collapsed across the three observation periods and classes and were compared to determine the degree of inter-rater agreement. Both raters reported optimal levels of program implementation and were in 100% agreement in all areas assessed (see Table 2).

Table 2

Fidelity of Program Implementation

Area	Results	Inter-Rater Agreement
SRA FLEX Literacy activities and routines	Follows all routines; makes appropriate modifications when needed.	100%
Teacher support	Level of support is almost always appropriate and aligned to student need.	100%
Error correction	Errors are immediately and accurately addressed in a positive manner; students have an opportunity to correct.	100%
Classroom characteristics	Affect is positive; teacher is organized, with established routines and clear expectations. Students are actively engaged. Pacing of lessons is appropriate and students are monitored.	100%

Results

Lexile Growth

Table 3 presents the mean fall *SRI* Lexile score, the mean spring *SRI* Lexile score, and the mean gain in *SRI* Lexile score for students in the *FLEX* and comparison groups. Students without a complete set of data (i.e., a fall *SRI* Lexile and a spring *SRI* Lexile score) were eliminated from the analysis. All scores are rounded to the nearest Lexile. At the start, students in the comparison group scored higher and were overall better readers than students in the *FLEX* group. To illustrate, the mean fall *SRI* Lexile score for seventh-grade students receiving instruction in *FLEX* was 715L, while the mean fall *SRI* Lexile score for seventh-grade students in the comparison group was 1043L. The mean gain in *SRI* Lexile for all students in the *FLEX* group was 134L, and the mean gain in *SRI* Lexile for all students in the comparison group was 30L. The difference in the mean gain in *SRI* Lexile units was 104L. To determine if there was a statistically significant difference in the mean gain in *SRI* Lexile score, a 2 (instruction: *FLEX* and comparison) X 2 (grades: 7th and 8th) *ANOVA* was conducted. Results showed that there was a statistically significant main effect for type of instruction, $F_{(1,225)} = 36.873$, $p < .01$ [95% CI 70 – 138]. The effect size, partial eta squared (η^2_p), was .141. Partial eta squared is interpreted in the following fashion, where .01 is small, .06 is medium, and .14 is large (Cohen, 1988). There was not a statistically significant interaction ($p = .752$) between instruction and grade level. Thus, the effects of *FLEX* instruction did not vary from one grade level to another.

While FLEX students demonstrated statistically significant gains overall compared to students in the comparison group, it was important to determine whether students attained the amount of growth needed to "close the gap." Based on Scholastic's growth expectation guidelines, students scoring lower on the fall *SRI* Lexile benchmark, as most of the FLEX students did, need to make greater gains to catch up to standard (Scholastic, 2011). Figures 1 and 2 present the percentage of seventh- and eighth-grade students, respectively, who met their individualized growth expectation, based on the fall *SRI* Lexile score (Scholastic, 2011). Approximately 83% of seventh-grade students in the FLEX group met their individual growth expectation, while 49% of seventh-grade students in the comparison group met their individual Lexile growth expectation. Approximately 81% of eighth-grade students in the FLEX group met their individual growth expectation, while just over 52% of eighth-grade students in the comparison group met their individual growth expectation.

Table 3

Mean SRI Lexile® Scores by Group

		FLEX				Comparison		
Grade	n	Fall SRI	Spring SRI	Gain	n	Fall SRI	Spring SRI	Gain
7	24	715L	848L	+133L	85	1043L	1077L	+34L
8	16	809L	945L	+136L	104	1131L	1157L	+26L
Total	40	753L	887L	+134L	189	1091L	1121L	+30L

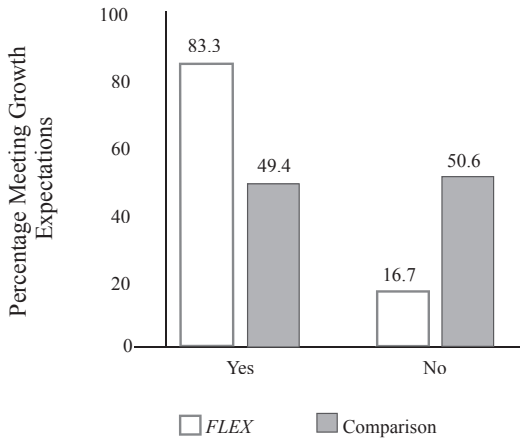

Figure 1. Percentage of seventh-grade students meeting individualized growth expectations.

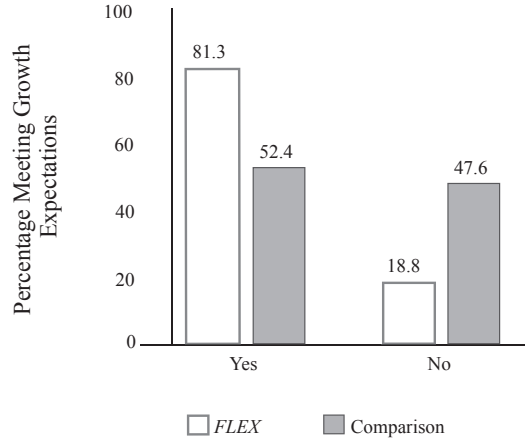

Figure 2. Percentage of eighth-grade students meeting individualized growth expectations.

Table 4 presents the average increase in Lexile score by students' proficiency band on the fall *SRI* Lexile administration. Students without a fall score and a spring score were excluded from the analysis (four students in the *FLEX* group and eight students in the comparison group). With the exception of seventh-grade students initially performing in the below basic category (for which there was only one student in the comparison group), students participating in *FLEX* experienced, on average, greater Lexile gains than comparison peers at every proficiency band on the fall *SRI* Lexile administration. For example, seventh-grade students in the *FLEX* group (n = 15) and initially performing in the basic range on the fall *SRI* Lexile administration gained an average 144L compared to 56L for students in the comparison group (n = 8). Seventh-grade *FLEX* students initially considered proficient (n = 5) gained 109L, while comparison students initially considered proficient (n = 47) gained 43L.

Similarly, eighth-grade students in the *FLEX* group experienced, on average, greater Lexile gains than comparison peers at every proficiency band on the fall *SRI* Lexile administration. For example, eighth-grade students initially performing in the basic range (n = 12) gained an average of 136L, compared to 66L for students in the comparison group (n = 8). The results for all students combined were similar to those described above based on grade level.

ORF Growth

Table 5 details the mean WPM on the fall and spring administration of the ORF for students receiving instruction with *FLEX*. Although ORF scores were desired for students in the comparison group, 148 students (approximately 75% of those in the comparison group) were missing a spring score as recorded by the district. Therefore, data from comparison students could not be included in the analysis. For seventh-grade students, the expected growth was 20 WPM, and the expected growth for eighth-grade students was 15 WPM. As shown in Table 5, seventh-grade students gained, on average, 28.75 WPM, which exceeded the expected growth. Eighth-grade students gained, on average, 15.51 WPM, which exceeded the expected growth. On average, all students combined gained 22.61 WPM.

A dependent samples *t* revealed that the difference in ORF scores from fall to spring was statistically significant for seventh-grade students, $t_{(23)} = 11.39$, p = .000 [95% CI = 23.53 – 33.97], for eighth-grade students, $t_{(19)} = 4.40$, p = .000 [95% CI = 7.99 – 22.51], and for the combined sample, $t_{(43)} = 9.80$, p = .000 [95% CI = 17.96 – 27.27]. Effect sizes were computed using Hedge's *g*, an unbiased estimate appropriate for small sample sizes. The magnitude of effect is interpreted in a similar fashion as Cohen's *d*, where .2 is *small*, .5 is *medium*, and .8 is *large* (Cohen, 1988). In terms of the practical significance of educational interventions, a meta-analysis of 124 studies incorporating 181 independent samples and 829 achievement effect sizes yielded a total mean effect size of .28 (Lipsey et al., 2012). The effect size (g = 1.06) for students in the seventh grade was considered large. The effect size (g = .63) for students in the eighth grade was considered medium. Finally, the effect size (g = .87) for all students combined was considered large.

Discussion

The results of this investigation revealed positive results across the dependent measures. Students in the comparison group began the year with higher *SRI* Lexile scores and were at a higher reading level compared to students in the *FLEX* group. The *FLEX* group received daily instruction for 70 min as compared to the comparison group that received 45 min per day, given the *FLEX* group's need for reading remediation. Interestingly, the *FLEX* group made significant gains on the comparison group. The mean gain for the *FLEX* group was over 100L greater than the comparison group by the end of the academic year; this result was statistically significant. Additionally, over 80% of the *FLEX* students met their individual growth expectation, while approximately 50% of the students in the comparison group met their individual growth expectation. There were also greater gains for the *FLEX* students as compared to the comparison students across proficiency bands. These gains resulted in a large effect size. Finally, *FLEX* students on average made greater gains on the AIMSweb ORF measure than the expected annual growth. The increases in ORF scores were statistically significant. These increases translate to medium to large effect sizes.

These results were consistent with those found in an investigation on the prepublished version of the *FLEX* program (Flaum-Horvath et al., 2015) where significant increases in Lexile scores were reported. Additionally, Flaum-Horvath et al. reported that only 29.32% of the expected yearly lessons were completed on average; they suggested that greater gains would be expected if a greater proportion of the program was completed given that there was a statistically significant correlation between Lexile growth and percentage of yearly lessons completed. The percentage of expected yearly lessons completed on average in the present investigation was 75%, resulting in greater gains for all students—47.8% exceeded the expected Lexile growth from fall to spring assessments in the Flaum-Horvath et al. investigation whereas over 80% of the *FLEX* students in the present investigation exceeded the expected growth.

These results are especially important when one considers that over 80% of U.S. students struggle in reading proficiency (Vaughn & Bos, 2015) and why adolescent reading is considered an extremely hot focus topic for 2016 (Cassidy et al., 2015). Instructional programs must be developed to meet the needs of students who are at risk for school failure, particularly those in middle and high school. Such programs must address CCSS ELA standards (Marchand-Martella & Martella, 2013) and contain the five components of effective reading instruction for older learners: word study, fluency, vocabulary, comprehension, and motivation (Marchand-Martella et al., 2013). An especially critical area among these five components is motivation. One approach to addressing the motivational aspects of instruction is by integrating technology into the program.

Table 4

Average SRI Lexile® Growth for FLEX Students by Proficiency Band

Grade	SRI Proficiency Band Fall*	n (*FLEX*)	Mean *Lexile* Growth *FLEX*	n (Comparison)	Mean *Lexile* Growth Comparison
7	Below basic	4	122L	1	279L**
	Basic	15	144L	8	56L
	Proficient	5	109L	47	43L
	Advanced	--	--	29	5L
8	Below basic	1	263L	1	131L
	Basic	12	136L	8	66L
	Proficient	2	127L	44	38L
	Advanced	1	11L	51	8L
All Students	Below basic	5	150L	2	205L
	Basic	27	140L	16	61L
	Proficient	7	114L	91	41L
	Advanced	1	11L	80	7L

*For proficiency bands in *Lexile* by grade level see Appendix C in Scholastic's *Growth expectations: Setting achievable goals.* Retrieved from http://teacher.scholastic.com/products/sri_reading_assessment/pdfs/SRI_GrowthExpectations.pdf
**n = 1 for this category.

Table 5

Student Performance on AIMSweb ORF Fall and Spring Administrations

	Fall ORF			Spring ORF			Gain	Effect Size**
Grade	*Mean WPM*	*SD*	*N*	*Mean WPM*	*SD*	*N*		*g*
7	118.21	27.15	24	146.96	27.36	24	28.75*	1.06
8	126.60	24.64	20	141.85	19.98	20	15.51*	.63
All Students	122.02	26.08	44	144.64	24.15	44	22.61*	.87

*Statistically significant, $p < .01$
**Computed using original standard deviation, per recommendation of Dunlop, Cortina, Vaslow, and Burke as found in Meta-analysis of Experiments With Matched Groups or Repeated Measures Design, *Psychological Methods, 1,* 170-177.

Computer-based instruction can increase student engagement and improve student attitudes toward learning and school (Hattie, 2009). According to Hattie,

> Computers are used effectively (a) when there is a diversity of teaching strategies; (b) when there is a pre-training in the use of computers as a teaching and learning tool; (c) when there are multiple opportunities for learning (e.g., deliberate practice, increasing time on task); (d) when the student, not the teacher, is in "control" of learning; (e) when peer learning is optimized; and (f) when feedback is optimized. (p. 221)

Such an approach is advocated by the National Education Association (NEA) as an approach to making instruction more student-centered (NEA, 2013). *FLEX* is designed to address these key issues.

Although positive findings were shown in the present investigation on the effects of *FLEX*, there are several caveats. First, although a comparison group was used in this investigation, the group was not equal to the *FLEX* group. The comparison group involved students who were higher readers; however, there may have been other differences between the two groups that could have accounted for the differences before and after the investigation. Therefore, future investigations should use a true control group to remove any selection and history effects.

Second, the comparison group was exposed to the *Holt Elements of Literature* series. Treatment fidelity was not measured to ascertain the extent to which the comparison program was implemented. Therefore, future research should conduct fidelity measures on the comparison or control program.

Third, given that the investigation was implemented in a rural school district in Eastern Washington, it is unknown whether these results would generalize to students in other areas of the country or areas with different demographics. The prepublication study provided some preliminary information on this issue in that the program was implemented in districts across five states; however, further replications are needed to determine the generalizability of these effects to other students. A related issue is that the current investigation involved authors of the *FLEX* program as fidelity observers. The authors were not involved in the prepublication implementation; therefore, there is a need to determine the effects of the program by researchers who are not affiliated with the program.

Finally, it is unknown what the effects of the program would be if it were implemented across all instructional days. The program was implemented across 75% of the instructional days due to the need for training of classroom staff and meeting the technological requirements at the beginning of implementation. There are data to suggest the results would be greater if the program were to be implemented more often as evidenced in the prepublication and current investigations. However, further research should establish the effects of the program when implemented across all instructional days.

Although there are several caveats present in this investigation, the results are promising and suggest that *SRA FLEX Literacy* can produce significant improvements in the reading performance of adolescent students who are at risk for school failure. Further research is warranted on the program to validate these effects.

References

Beers, K., Jago, C., & Appleman, D. (2009, 2010). *Holt elements of literature first and second course.* New York, NY: Holt, Rinehart, & Winston.

Biancarosa, C., & Snow, C. E. (2006). *Reading next: A vision for action and research in middle and high school literacy. A report to Carnegie Corporation of New York* (2nd ed.). Washington, DC: Alliance for Excellent Education.

Boardman, A. G., Roberts, G., Vaughn, S., Wexler, J., Murray, C. S., & Kosanovich, M. (2008). *Effective instruction for adolescent struggling readers: A practice brief.* Portsmouth, NH: RMC Research Corporation, Center on Instruction.

Cassidy, J., Grote-Garcia, S., & Ortlieb, E. (2015, September/October). What's hot in 2016: Recognizing new trends and celebrating 20 years of data. *Literacy Today*, 12–16.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.

Daniel, M. H. (2010). *Reliability of AIMSweb reading curriculum-based measurement (R-CBM) (oral reading fluency).* New York, NY: Pearson.

Dunlop, W. P., Cortina, J. M., Vaslow, J. B., & Burke, M. J. (1996). Meta-analysis of experiments with matched groups or repeated measures designs. *Psychological Methods, 1,* 170–177.

Flaum-Horvath, S., Marchand-Martella, N. E., Martella, R. C., & Cleanthous, C. (2015). An evaluation of the *SRA FLEX Literacy*® program: A pre-publication version shows promise. *The WERA Educational Journal, 7*(2), 50–56.

Hasbrouck, J., & Tindal, G. A. (2006). Oral reading fluency norms: A valuable assessment tool for reading teachers. *The Reading Teacher, 59*(7), 636 – 644.

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* Abingdon, Oxon, United Kingdom: Routledge.

Kamil, M. L., Borman, G. D., Dole, J., Kral, C. C., Salinger, T., & Torgesen, J. (2008). *Improving adolescent literacy: Effective classroom and intervention practices: A Practice Guide* (NCEE #2008-4027). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc

Lipsey, M. W., Puzio, K., Yun, C., Hebert, M. A., Steinka-Fry, K., Cole, M. W., . . . Busick, M. D. (2012). *Translating the statistical representation of the effects of education interventions into more readily interpretable forms.* Washington, DC: National Center for Special Education Research.

Marchand-Martella, N. E., & Martella, R. C. (2013). *Common core state standards and FLEX Literacy: Moving from novice to expert in 21st century English language arts skills.* Columbus, OH: McGraw-Hill School Intervention Group.

Marchand-Martella, N. E., Martella, R. C., Fisher, D., McTighe, J., Kosanovich, M., Johnson-Glenberg, M., & Morrell, E. (2014). *SRA FLEX Literacy.* Grades 3–5 and Grades 6–12. Columbus, OH: McGraw-Hill.

Marchand-Martella, N. E., Martella, R. C., Modderman, S. L., Petersen, H. M., & Pan, S. (2013). Key areas of effective adolescent literacy programs. *Education & Treatment of Children, 36*, 161–184.

Martella, R. C., & Marchand-Martella, N. E. (2015). Improving classroom behavior through effective instruction: An illustrative program example using *SRA FLEX Literacy®*. *Education & Treatment of Children, 38*, 241–272.

National Center for Education Statistics. (2013). *The nation's report card. A first look: 2013 mathematics and reading* (NCES 20214-451). Washington, DC: Institute of Education Sciences, U.S. Department of Education.

National Education Association. (2013). Retrieved from http://www.nea.org/home/55434.htm

National Governors Association Center for Best Practices, Council of Chief State School Officers. (2010). *Common Core State Standards.* Washington, DC: Author.

Pearson. (2012). *AIMSweb technical manual.* Retrieved from http://www.aimsweb.com/wp-content/uploads/aimsweb-Technical-Manual.pdf

Roberts, G., Torgesen, J. K., Boardman, A., & Scammacca, N. (2008). Evidence-based strategies for reading instruction of older students with learning disabilities. *Learning Disabilities Research & Practice, 23*, 63–69.

Scammacca, N., Roberts, G., Vaughn, S., Edmonds, M., Wexler, J., Reutebuch, C. K., & Torgesen, J. K. (2007). *Interventions for adolescent struggling readers: A meta-analysis with implications for practice.* Portsmouth, NH: RMC Research Corporation, Center on Instruction.

Scholastic Inc. (2015). *Scholastic Reading Inventory.* New York, NY: Author. Retrieved from http://www.scholastic.com/education/assessment/literacy/sri-index.htm

Scholastic Inc. (2012). *Interpreting assessment results.* New York, NY: Author.

Scholastic Inc. (2011). *Growth expectations: Setting achievable goals*. Retrieved from http://teacher.scholastic.com/products/sri_reading_assessment/pdfs/SRI_GrowthExpectations.pdf

State of Washington Office of Superintendent of Public Instruction. (2015). *Measurements of student progress.* Retrieved from http://www.k12.wa.us/assessment/StateTesting/MSP.aspx

Stenner, A. J., Burdick, H., Sanford, E. E., & Burdick, D. S. (2007). *The Lexile framework for reading technical report*. Durham, NC: MetaMetrics.

Torgesen, J. K., Houston, D. D., Rissman, L. M., Decker, S. M., Roberts, G., Vaughn, S., . . . Lesaux, N. (2007). *Academic literacy instruction for adolescents: A guidance document from the Center on Instruction.* Portsmouth, NH: RMC Research Corporation, Center on Instruction.

Vaughn, S., & Bos, C. S. (2015). *Strategies for teaching students with learning and behavior problems* (9th ed.). Boston, MA: Pearson.

Authors

Shannon Flaum-Horvath, PhD is an Independent Research Consultant with SKF Educational Services, LLC, and a licensed school psychologist. Her research interests include regression discontinuity research design, academic intervention products, and special education.

Nancy E. Marchand-Martella, PhD, BCBA-D, is Chair of the Department of Educational Psychology and Professor of Special Education at the University of Oklahoma. Dr. Marchand-Martella's research interests include adolescent literacy, effective instructional practices, and academic interventions within a multitiered system of supports.

Ronald C. Martella, PhD, BCBA-D, is a Professor of Special Education in the Department of Educational Psychology at the University of Oklahoma. Dr. Martella's research interests include behavior management, multitiered academic and behavioral supports, and applied behavior analysis.

Cassondra Kauppi, MEd, is a curriculum specialist for McGraw-Hill Education School Group. Her research interests center on adolescent literacy efforts.