LEXIA
POWER UP
LITERACY

Supporting Struggling and Non-Proficient Middle School Readers with the Lexia® PowerUp Literacy® Program

RESEARCH BRIEF

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Supporting Struggling and Non-Proficient Middle School Readers with the Lexia® PowerUp Literacy® Program

Key Findings

ESSA **STRONG** LEVEL

This evaluation of PowerUp is a gold standard randomized control trial (RCT) that meets ESSA's standards for **STRONG** research - the highest tier of efficacy evidence outlined by federal law.

40+ POINTS

PowerUp users scored **40+ scaled points** higher than non-users on a standardized assessment of reading achievement.

10+ POINTS

PowerUp users gained the equivalent of **10 percentile points** more than non-users.

All sub-populations benefited equally from PowerUp. **Black/African American and White/Caucasian** achieved similar gains, as did general and special education students.

3X

Results show that PowerUp is more than **3x** as effective as the average middle school reading intervention.

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Background

Approximately 2 out of 3 students are unable to read proficiently when they complete middle school.[1] Not only do struggling readers perform poorly in English Language Arts (ELA) classes, but deficits in reading negatively impact their performance across subject areas, as these students may have difficulty mastering content in informational textbooks.[2] At the root of their struggles, students who are unable to read proficiently may lack more general language abilities (e.g., vocabulary, grammar, sentence processing) and/or word decoding skills (facility in mapping letters to sounds).[3]

The Lexia® PowerUp Literacy® program (PowerUp) was designed to target common deficits impacting struggling and non-proficient adolescent readers. PowerUp is a blended learning program that provides an adaptive sequence of learning activities that students work through independently online, along with aligned teacher-driven lessons and paper and pencil activities. PowerUp is organized into three separate instructional strands: Word Study, Grammar, and Comprehension. The Word Study strand promotes word recognition skills through instruction of letter-sound and syllable division patterns, sight words, and structural analysis (prefixes, roots, suffixes). The Grammar strand addresses language comprehension skills such as understanding parts of speech and syntax, with an emphasis on connective words. The Comprehension strand advances language comprehension through increasing background knowledge, verbal reasoning, and understanding of text structures. Vocabulary knowledge is interwoven throughout all three strands. PowerUp's theory of change posits that instruction in word recognition and language comprehension skills will boost reading comprehension and writing.

This study is a rigorous, gold standard evaluation of PowerUp's effectiveness in promoting reading/literacy skills among struggling middle school readers. It meets ESSA's standards for Tier 1 Strong research, the highest level of efficacy evidence outlined by federal law.

[1] National Assessment of Educational Progress (NAEP). (2019). NAEP report card: Reading. Retrieved from https://www.nationsreportcard.gov/reading/nation/achievement/?grade=8

[2] Schiefele, U., Schaffner, E., Möller, J., & Wigfield, A. (2012). Dimensions of reading motivation and their relation to reading behavior and competence. *Reading Research Quarterly, 47*, 427-463. doi:10.1002/RRQ.030

[3] Gough, P.B., & Tunmer, W.E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education, 7*, 6-10. doi:10.1177/074193258600700104
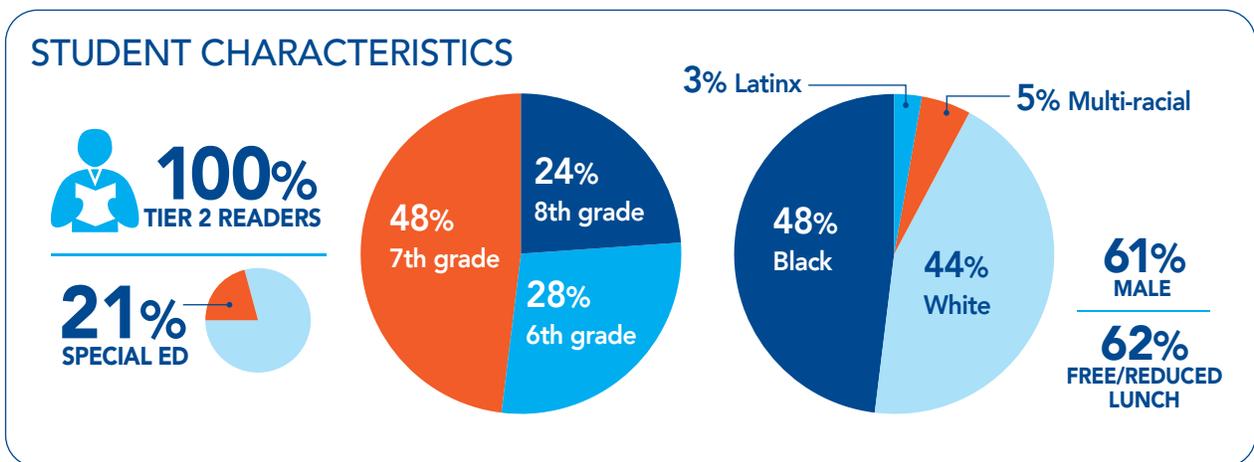
Method

Sample

To evaluate PowerUp, Lexia partnered with a mid-sized suburban school district with approximately 5,000 K–12 students. The state has identified over 60% of students in this district as being economically disadvantaged, and all K–8 schools within the district receive school-wide Title I support. At the middle school level, 70% of students were reading below grade level at the start of the research study.

The district nominated 10 teachers from two middle schools to participate in the study. Each of these teachers instructed a supplemental reading class comprised of students identified as needing Tier 2 support (i.e., scoring below the 35th percentile in ELA). Students were selected for the classes based on evaluations by literacy coaches, interventionists, and special education providers, as well as their grades and standardized test scores. These supplemental reading classes met daily for 40 minutes and were held in addition to regular ELA instruction students were receiving.[4] Each class contained a mix of students in grades 6–8.

Eight of the 10 teachers provided personal demographic data for the study. The teachers were quite experienced. Eighty-eight percent had Master's degrees, and nearly two-thirds (63%) had been teaching for 16+ years.

This report focuses on 155 English-speaking students who were enrolled in a supplemental reading class and completed the district's progress monitoring assessment in the Fall and Spring of the study year.[5]

STUDENT CHARACTERISTICS

100% TIER 2 READERS

21% SPECIAL ED

24% 8th grade
48% 7th grade
28% 6th grade

3% Latinx
5% Multi-racial
48% Black
44% White

61% MALE
62% FREE/REDUCED LUNCH

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[4] Regular ELA instruction was delivered using a modified version of Houghton Mifflin Harcourt's Collections ELA program.

[5] An additional five students were removed from the dataset because their scores at one or both time points were outliers (more than +/- 3.0 standard deviations from the mean).

Procedure

After students had taken their Fall ELA progress monitoring assessments, 7 teachers (105 students) were randomly assigned to a treatment group that would use PowerUp in their supplemental reading classes, and 3 teachers (50 students) were assigned to a control group that would continue to deliver the traditional curriculum in their supplemental reading classes.[6,7] The district requested that more students be in PowerUp classes than traditional curriculum classes. They historically struggled to accelerate students' reading proficiency, and were eager to try PowerUp with as many students as possible.

Reading Achievement Measure

Reading achievement was tested with the STAR Reading® (STAR), a computer-adaptive assessment that students typically complete in about 15 minutes. STAR measures word knowledge and skills, comprehension strategies and constructing meaning, analyzing literary text, understanding authors' craft, and analyzing argument and evaluating text. Students who complete STAR receive a scaled composite score ranging from 0–1400.

Results

PowerUp Implementation

Students in the PowerUp classes began using the program in early January and continued through the end of the school year, excluding weeks with district-wide standardized testing or holidays/vacation. On average, PowerUp students used the program for 17 weeks, completing 55 minutes of online work per week.

STUDY DURATION

• 17 weeks • 55 min/week

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[6] Control classes used either McGraw-Hill's Corrective Reading or Read to Achieve: Comprehending Content Area Text. Corrective Reading is an intervention program that provides instruction through the 7th grade level. Read to Achieve features a series of science and social studies texts designed for students in middle and high school. Both programs are primarily used to promote comprehension and writing strategies, although the lowest level of Corrective Reading used by a minority of students in this district also provides instruction in decoding and phonemic awareness.

[7] Condition assignment was stratified by school (i.e., randomization occurred within schools), such that both middle schools contained both treatment and control classes.

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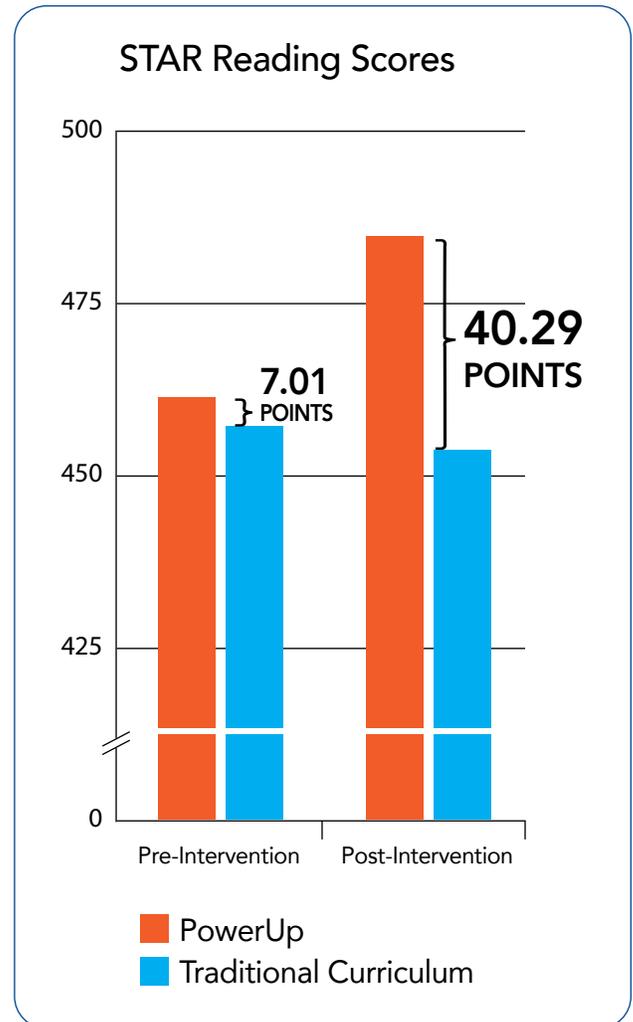A Rosetta Stone® Company

Reading Outcomes

In the Fall prior to the intervention, students in the PowerUp and traditional curriculum classes earned similar STAR scores. In the Spring after the intervention, PowerUp students scored about 40 points higher than traditional curriculum students. That difference is statistically significant and equivalent to roughly 10 percentile points.[8]

Cohen's *d* is a measure of effect size, which is used in research to quantify the impact of an intervention. According to a review by the US Department of Education's Institute of Education Sciences, the average reading intervention for middle school students has an effect size of Cohen's $d = .11$.[9] In the present study, Cohen's *d* for PowerUp was .36, meaning that PowerUp was more than

➤ **3X AS EFFECTIVE** as the average middle school reading intervention in the United States.

PowerUp was equally impactful for students of all backgrounds. Results were similar for special education and general education students, and White/Caucasian and Black/African American students.

See the technical appendix for more information on the calculation of these results.

STAR Reading Scores

7.01 POINTS

40.29 POINTS

- Pre-Intervention
- Post-Intervention

■ PowerUp
■ Traditional Curriculum

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[8] What Works Clearinghouse. (2014). *Procedures and standards handbook* (3rd ed.). Washington, DC: What Works Clearinghouse, Institute of Education Sciences, US Department of Education.

[9] Lipsey, M. W., Puzio, K., Yun, C., Hebert, M. A., Steinka-Fry, K., Cole, M. W., Roberts, M., Anthony, K. S., & Busick, M. D. (2012). *Translating the statistical representation of the effects of education interventions into more readily interpretable forms* (NCSER 2013-3000). Washington, DC: National Center for Special Education Research, Institute of Educational Sciences, US Department of Education

Conclusion

PowerUp succeeded in promoting reading achievement for Tier 2 readers in grades 6-8. Although the treatment group used PowerUp for only half the school year, treatment students demonstrated significantly higher scores on STAR than control students using the traditional curriculum.

PowerUp's robust instruction prepared students to succeed on a comprehensive literacy assessment like STAR. Unlike the district's traditional curriculum, which primarily focused on reading comprehension, PowerUp offers extensive instruction in Word Study, which may have helped students on the assessment's word knowledge items. In addition, PowerUp users received instruction in the areas of academic language, vocabulary and general language comprehension across both the Grammar and Comprehension strands. Together, these features of the program may have benefited students in terms of performance on the assessment's comprehension items.

Ultimately, these findings provide strong evidence of PowerUp's effectiveness with a diverse population of struggling and non-proficient middle school readers. We assume that effects will only increase as students are able to engage with the program more deeply over a full school year.

Technical Appendix

To test for PowerUp's impact, a multi-level model was calculated using HLM 7. The mixed model took the following form:

$$Spring_{ij} = \Upsilon_{00} + \Upsilon_{01} * Treatment_j + \Upsilon * X_{ij} + u_j + r_{ij},$$

where $Spring_{ij}$ is the Spring STAR score for student i in class j, Υ_{00} is the expected Spring STAR score for the average student in a control class, $Treatment_j$ is an indicator of being in a treatment class (1 = treatment, 0 = control), Υ_{01} is an estimate of the difference in expected STAR scores between students in treatment and control classes, X_{ij} is a vector of dichotomous and grand-mean centered student-level control variables,[10] Υ is the set of slopes for each control variable, u_j is a teacher-level residual term, and r_{ij} is a residual term for each student within each class.

Results of this model revealed that the impact of PowerUp was positive and statistically significant,

$\Upsilon_{01} = 64.28$, $SE = 26.05$, $p = .039$.

In follow-up models, we included a series of cross-level $Treatment_j * X_{ij}$ interaction terms. None of these were significant.

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[10] The slope on free or reduced lunch status was modeled as random. It was decided to do so because the variance component was significant (6511.22, χ^2 (9, N= 155) = 26.04, p = .002), indicating that the impact of SES varied between children within classes. In alternate models, it was found that the variance components for the other control variables were not significant, and, as such, all other controls were modeled as fixed.

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